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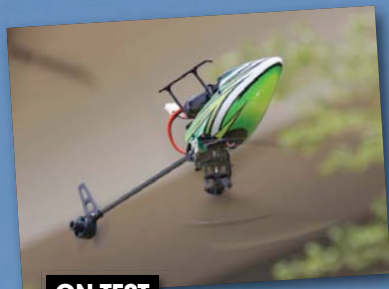
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Radio Control

Issue 118

RotorWorld

REVIEW OF THE YEAR - Looking back at the best of 2015



ON TEST

Assault 100

We put Hobby King's latest small aerobatic model to the test



HOW TO

Zero to Hero

Getting prepared to fly to music in 3D competition

EVENT REPORT

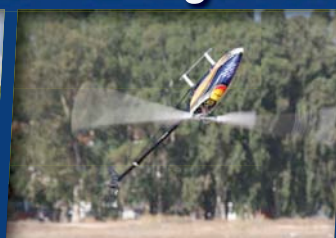
USA National Championships

Full report from one of the biggest events across the pond

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Due to the overwhelming success and popularity of the first special issue published earlier this year, we have made the very easy decision to turn Radio Control Drone Zone into a regular, bi-monthly addition to ADH Publishing's portfolio.

Drone Zone will offer expert buying advice, reviews of the latest machines and accessories, tips on where and how to fly safely, in-depth features on aerial photography and video, build tips and technical articles, as well as general features on subjects including GPS, FPV and electronic systems.

Regular features will include:

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- Technology features on FPV and aerial photography
- Building your own drone from scratch or kit
- Drone dictionary with a full list of words, acronyms and terminology
- Plus, experts tips on drone dos and don'ts, safety advice, staying within the law, setting up and how to fly

With all this focused content and more, Drone Zone is a must buy special for all UAV, drone, quad and multi-rotor enthusiasts. The next issue (Dec/Jan) will go on-sale Thursday 12th November. For more details visit the ADH website at www.adhpublishing.com/shop/store/products/drone-zone-special-edition

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PUBLISHER

ADH Publishing Ltd
Doolittle Mill, Doolittle Lane
Totterhoe, Beds, LU6 1QX
Tel: 01525 222573
Fax: 01525 222574

EDITOR

Neil Mead
editor@rotorworld.co.uk

TECHNICAL EDITOR

Dave Dijkmans
dave.dijkmans@rotorworld.co.uk

CONTRIBUTING EDITOR

Tom Stacey
tom@rotorworld.co.uk

SUB EDITOR

Sarah Mead
sarah@rotorworld.co.uk

DESIGN

Alex Hall

WEBSITE

The ADH Web Team

ADVERTISING ENQUIRIES

Sean Leslie
Tel: 01525 222573,
01525 306201
sean@adhpublishing.com

DISTRIBUTION

Seymour Distribution
2 East Poultry Avenue
London, EC1A 9PT
Tel: 020 7429 4000

NEWSTRADE

Select Publisher Services
3 East Avenue
Bournemouth, BH3 7BW
Tel: 01202 586848
tim@selectps.com

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enquiries@adhpublishing.com
Tel: 01525 222573

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ADH Publishing Ltd
Doolittle Mill, Doolittle Lane
Totterhoe, Beds, LU6 1QX
Tel: +44 (0) 1525 222573
Fax: +44 (0) 1525 222574
enquiries@adhpublishing.com
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On the cover: SAB Goblin 380 KSE
Photo: Dave Dijkmans

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NEW YEAR, NEW HOBBY

So here we are about to start yet another new year and who knows what exciting new developments we are going to see? We've certainly witnessed a lot of changes in our hobby over the last 12 months. The technology advances we've seen take place in recent years, such as spread spectrum transmitters, brushless motors, flybarless systems and LiPo batteries have now matured to the stage where improvements are smaller and less noticeable. It means helicopters have become more accessible and easy to fly for everyone which has brought a lot of new people into the hobby. All of this meant it was in pretty good shape.

That was until the quadcopter arrived on the scene. The new kid on the block offered all the main traits of a helicopter, but was even more stable and easy to fly and soon everyone had one. Maybe these new fangled rotary craft would bring even more people into the hobby we know and love as they would

soon see how much fun can be had with a helicopter. But somehow this hasn't necessarily been the case, in fact many quads or drones are purchased by people with no knowledge, and often no interest, in RC helicopters which is a big shame for all concerned.

Here at Rotorworld we've done our best to encourage new drone owners to have a go with a helicopter. Yes, they can be a challenge to fly, but also extremely rewarding when all the practice pays off and you are finally able to complete some complex manoeuvres. So I guess what I'm trying to say is, we need RC helicopters and RC drones to coexist and complement each other rather than be seen as totally different disciplines. You can't blame the manufacturers for jumping on board the drone bandwagon and producing a range of machines as that's currently where the big sales are, but they mustn't forget the hard core heli flyers who will still be around long after the drone explosion has

died down. No doubt there will be many owners of shiny new multi-rotors they received for Christmas reading this issue and I would say to them, welcome to the club, enjoy your new drone, but once you've mastered it and had some fun with aerial photos and video, why not take a look at a helicopter? It's the logical next step that will allow you to improve and refine your new rotary piloting skills and start to push even harder for the maximum performance of man and machine. You can still play with your multi-rotor, but you could also become a helicopter pilot which is potentially a lot more exciting.

So back to our predictions for the year and sometimes to see what's coming, you have to look at what's already been which is why this issue we have included our annual Review of the Year feature that starts on page 26. Last year we saw more big and successful heli flying events than ever before take place all over the world and I expect this trend to continue. The quality of events now is incredible and all are extremely



BY, NEW YOU!

well organised and held with good humour. If you want to see what's possible with an RC helicopter, I advise you go along to one or two during the coming season and watch the top pilots perform.

Despite the growth in multi-rotors there were still a lot of helicopter releases of all shapes and sizes and, as I mentioned earlier, I hope this also continues in 2016. With helicopters now available for great value prices, now really is the time to invest in a machine that will bring you hours of fun. And to help you along the way, this issue we've started our new Flight School beginners series which will hold your hand along the way and starts on page 54.

So welcome along all new quad, drone and helicopter owners, it's great to have you on board for what promises to be yet another fantastic year.

Neil Mead



**DON'T MISS
THE NEXT ISSUE
OF ROTORWORLD
ISSUE 119 (MARCH 2016)
ON SALE 4th FEBRUARY
SEE PAGE 62
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» Orlando Helicopter Blowout

The popular Orlando Heli Blowout took place once again at the end of last year in the Sunshine State with many of the world's top 3D pilots making the journey to attend. It's a great way to round off the season and enjoy some welcome sunshine at the same time.

Major manufacturers and teams were in attendance including SAB Goblin who posted photos on their Facebook page. Duncan Bossion was flying his new Soxos helicopters and won the night flying competition first time out.

We'll have more news and results from the event soon, but in the meantime you can find out more by visiting the Facebook page at www.facebook.com/orlandoblowlout

» Drone Aware initiative launches at the Drone Show

BE SAFE BE LAWFUL BE DRONE AWARE



The recent Drone Show at the NEC, Birmingham saw the launch of a joint British Model Flying Association (BMFA) and Civil Aviation Authority (CAA) initiative. The BMFA and CAA shared the Drone Aware stand at the Drone Show along with representatives from the BMFA Specialist body the British First Person View Racing Association (BFPVRA).

The Drone Aware initiative is aimed at new and existing drone operators to promote an understanding of their legal responsibilities when operating their drone.

As part of the initiative April will be Drone Awareness Month, there will be a high profile media launch and BMFA affiliated clubs will be encouraged to host Drone Aware events where new and existing drone operators will be able to attend and learn more about their responsibilities and also take a new voluntary proficiency certificate.

Drone Aware is supported by the following associations and companies:

- British Model Flying Association (BMFA)
- Civil Aviation Authority (CAA)
- British First Person View Racing Association (BFPVRA)
- Large Model Association (LMA)
- Scottish Aeromodellers Association (SAA)
- Association for Remotely Piloted Aircraft and Systems (ARPAS-UK)
- Integro Insurance Brokers (The BMFA insurance broker)
- The Royal Aero Club of the United Kingdom (RAeC)
- British Gliding Association (BGA)
- British Microlight Aircraft Association (BMAA)
- British Hang Gliding & Paragliding Association (BHPA)
- RCM&E Magazine
- R/C Flight Camera Action Magazine
- Rotorworld Magazine
- Drone Zone Magazine
- BYOD Build Your Own Drone

More associations and companies are regularly being added to the list of supporters and if you are interested in either hosting a Drone Aware event or supporting the initiative please make contact at www.droneaware.org/contact-us or call the British Model Flying Association and ask to speak to the Development Officer Manny Williamson. Tel 0116 2440028

See www.droneaware.org for more details and to keep up with Drone Aware news and download the Drone Aware leaflet at <http://droneaware.org/wp-content/uploads/2015/10/Drone-Aware-Letter.pdf>

» GLOBAL 3D, the 'new' 3D competition in a familiar format

The team who provided the infrastructure for 3D Masters in 2010, 2011 and 2012 is launching a new 3D competition event in 2016 called GLOBAL 3D. This is set to be the new RC helicopter 3D world competition. A competition where the true titans of 3D can compete with their peers across the globe. Our mission is to bring you the most exhilarating, breath taking RC helicopter flying you have ever seen in a back-to-back, 3D packed, long weekend.

After being absent in organising 3D events for three years we felt there was a gap. A need to recreate something great again. A need to feel the excitement of a big event again, walking amongst the best pilots of the world and doing your part in creating it. Over the years the hotspot for 3D events has proven to be Venlo, the Netherlands. In no other

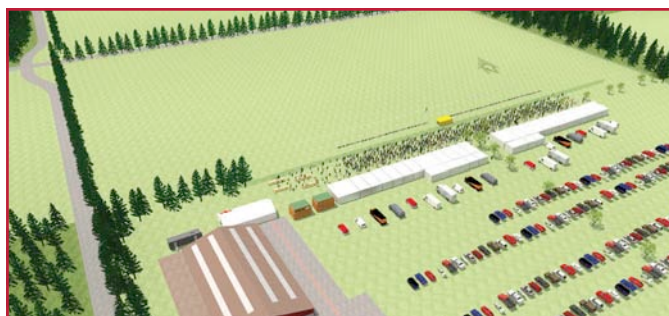
European location the same massive crowd and vibe could be recreated. The best event was actually the one we had on our own field of the Jupiter Club in 2010. It was very hard work the first time but the atmosphere was brilliant and I have always preferred grass over tarmac because it is more forgiving, pushing pilots even further.

Unfortunately we cannot have the event at that location anymore but now we have found a new and even better location for 2016. It is on grass and has the similar beautiful scenery we had in 2010. We also have thought hard and long about the format but evolution has done its work during 3D Masters to provide us with the best format to define the best pilots in the world. That is why we do not want to change a format which has proven itself for more than a decade.

The constant battle in every competition is time. How can we fit in all these pilots and still give them a fair chance to show off what they have worked for so hard all these months? To address this we will reduce the number of pilots and also give pilots the chance to redeem themselves when something goes wrong during a flight using the yellow card system.

Every pilot has one yellow card which is one 'get out of jail for free card' for the whole competition. If the pilot has a 'problem' during a flight he can play the yellow card and redo the flight. This enables pilots to fly on the edge but is also more fair to the pilots who has invested so much time to compete there.

GLOBAL 3D 2016 will be held in Venlo, The Netherlands 1, 2, 3 July 2016.



» Drone produced sci-fi series being launched by 3D Robotics

Founded and led by former Wired magazine editor in chief Chris Andersen, 3DR has released a trailer for its new original series of films, entitled 'Life After Gravity'. According to 3D Robotics (3DR), the series is about "the blessings and poisons of extraordinary power, the many conflicts of its pursuit, and the birth of a new era for our civilisation when we're suddenly relieved of the trappings of gravity."

Shot entirely using 3DR's Solo drones and GoPro cameras, the series shows a dystopian future set primarily in Hong Kong and the Mexican jungle, and highlights the tension between the forces of science and anti-science, as well as "a menacing international space agency... a type III alien civilisation" and even the beginnings of a new human age.

3DR says the films were shot by its in-house production team in conjunction with producers and Solo users in a variety of locations around the globe. All of it was shot using only standard Solo drone equipment. In short, the company, one of the world's largest makers of consumer

drones, is trying to show that its flagship drone is a "complete video production unit in a backpack." It's also providing user field reports with each of the series' six episodes that include behind-the-scene videos and blog posts about the productions.



"The entire concept behind Solo was to give people a powerful and easy-to-use new storytelling tool that fits in a single backpack," 3DR wrote. "And with this series, we're putting that fundamental concept into real-world practice so you can see the results."

The Life After Gravity film trailer can be viewed on YouTube at <https://youtu.be/-AVpSssnm4>



» Duncan Bossion joins Heli-Professional and Soxos team

One of the world's top 3D pilots, Duncan Bossion has announced that he will now be flying the Soxos 700 heli from Heli-Professional after splitting with long term sponsor Gaudi. Duncan announced the news on his Facebook page and he has already been seen flying his new helicopters at the Orlando Helicopter Blowout where he won the night flying competition.

Duncan said on Facebook: "I am really happy to present you my new helicopter: Soxos 700 from Heli-Professional. I am joining this team not only as a pilot no no. I am joining to taking care with them of the team, the heli and the future. So stay tuned for a lot of new thing in my life."

To find out more about Heli-Professional, the Soxos range of helicopters and to keep up to date with the latest news, visit www.heli-professional.com

Merry Christmas!



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Assault Course



SHAUN GARRITY GETS BACK INTO HELICOPTERS IN A SMALL WAY AND GOES BACK TO THE FUTURE BY TESTING OUT THE LATEST ASSAULT 100 MICRO SIZED MACHINE FROM ONLINE RETAILER, HOBBY KING



I've had a very fragmented relationship with helicopters over the years. I first clipped my toe in the water a while

ago... well, when I say a while, I really mean over 40 years ago back in 1973 when Pink Floyd released *Dark Side of the Moon*, the next James Bond film *Live & Let Die* was released, speed limits on motorways were reduced to 50mph and VAT came into effect.

Anyway, Jim Morley had been experimenting with home built RC model helicopters for a while and his design for the Morley Bell 47G Mk2B was covered as an article in RCM&E in late 1973. I had to have one.

It was originally sold as a plan pack, yes, you read that correctly you got chunks of aluminium, shaped but not drilled or tapped, the clutch shoes had to be made from a steel ring that needed cutting in half and shaping and the springs wound from piano wire. The boom was constructed from Ali tube, piano wire or even spruce, so you get the picture, a million miles away from what's available today. Oh, and then there was the gyro, well actually gyros weren't available. You tied a length of string to the tail until you figured out how to keep the nose pointing where you wanted it. I forgot, you also needed to carve the blades from lumps of beech and balsa.

Things improved over the next few years and finished parts became

160 RADIO CONTROL MODELS & ELECTRONICS

MORLEY MK2C

Higher successful design that can be made up from the set of parts available finding your own ordinary materials like wood and glue etc. You need to be an above average modeller with facilities for soldering, drilling and tapping & has thread etc. There is not a lot of work involved but it is different (added interest?) and certainly the crash damage is less extensive. Model is 47in, long, weighs 7 lbs. For 20-45 engines and 4 ch. radio. Full set of expensive parts—£82 inc. post. Plan only, with details of separate part packs available for single or single building, £5.50 post free UK, from—

M. MORLEY, 403 WOODHAM LANE, WOODHAM, WEYBRIDGE, SURREY

The basic model allows scope for personal scale improvements like the superb example shown by Derek Haines. Reference to last Feb. "Commercial Development" also OK, (last cover and edit), allowing Bob Rowley's conversion, winning model will all help to convince you to start now.

Advert from 1976 for the Morley Mk 2

sky lark eh-1

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One of the very first electric heli kits available was the Ishimasa Sky Lark EH1



Clever packaging design keeps everything safely in place

Streamlined, aggressive styling the Assault 100 looks the business

Depending on which version you buy the RF module and associated cables will be included or not

available, you could now crash and be flying again in a few days. There was even a collective pitch version. My next attempt was with one of the first electric helis available; manufactured in Japan by Ishimasa, called the Skylark EH1 and muggings here bought one in 1980. It had an amazing flight time of about two minutes and was about as strong as a wine glass. However it did fly reasonably well and to be fair it was innovative, unique and basically the origin of all electric helicopters, been I believe the first commercial electric kit produced. After that helis were off the radar. I was spending too much time repairing, not enough flying, back to fixed wing.

THE PASSAGE OF TIME

Jump forward many years and I decided it was time to try again. After been offered all sorts of advice on the best one to buy for a beginner, I ignored everybody and bought a T-Rex 250. Not the best choice I know but eventually I cracked nose in hovering. I then progressed to a T-Rex 500 but quickly realised my real passion was with multi-rotors, so it lived in the shed after only a dozen flights, for a year or so until a mate made an offer for it and royally rinsed me.

Today is a different story as you have a massive choice from beginner to insane 3D RTF out of the box. I thought it was time to reconnect with the single rotor set.

The Assault 100 looked unbelievable value for money, actually read that as inexpensive enough not to worry about if my interest waned again. It has an impressive spec having a flybarless head, two brushless motors, pirouette compensation, low cost spares and compatible with a range of different transmitters. I wanted one.

Features at a glance...

- Twin brushless motors
- Turnigy 6XS compatible
- DSMX/DSM2 compatible (requires a DSMX or DSM2 satellite Rx) or Turnigy RF module which is compatible with Futaba, JR, Walkera - depending on version purchased.
- Micro size (only 113mm long)
- Made of robust materials
- Highly refined flight control system
- Pirouette compensation technology

WHICH ONE WILL YOU CHOOSE?

There are two versions available, one for use with a spectrum DSM2 / DSMX satellite Rx (not included), but can also bind to the Turnigy 6XS Tx and one version that comes complete with a Turnigy RF module that is compatible with Futaba, JR and Walkera 6ch radios that have a trainer (DSC) socket.

They both come with spare rotor blades, tail blades, main gear, feathering spindles, linkages, screws, some tools and an instruction CD. The included LiPo is a 2S 450mAh 25C rated.

If you buy the version with the RF module you also get a USB charge lead, Futaba and JR/Walkera adapter lead. The RF module is extremely easy to use. Just plug the appropriate lead into the transmitter, select the radio make and you are ready to bind the transmitter to the helicopter. Some of the radios can power the module; if not then the module will run on its internal battery.

As Hobby King state in their product overview, the Assault 100 is robustly engineered using high quality DuPont plastics and advanced carbon fibre composites making it an extremely strong little helicopter. It will withstand most knocks and bangs and will come back for



The tail rotor just pushes onto the motor shaft. Simple but effective

Giving additional protection to the tiny brushless tail motor the plastic cage is moulded with the tail skid

more, but if you do have a crash which results in you wanting spare parts there are plenty of low cost spares available.

This was one of the deciding factors for me, especially as I was out of practice and primarily wanted it to fly indoor 3D.

DELVING DEEPER

On inspection, it's as described and clearly a lot of thought has been put into the design and selection of materials used. The frame plastic appears strong but not brittle; the carbon tail boom is rigid with no apparent flex. This is an important design consideration to keep the heading

hold accurate. Another great idea is the plastic rear motor mount. It forms a cage and should offer additional protection to the tiny brushless motor. The tail skid tapers in thickness; strength where needed but allowing the bottom to flex a little.

The rotor-head and swash-plate again look fit for purpose. The ball links have no slop evident, the very slight movement in the linkage coming from the servo gears. The linear servos work smoothly and seem very quick. One clever feature about the servos is the ability to replace the carbon track plate if it wears out, (this provides positional feedback information to the servo amp). It only costs approx. £0.60; much cheaper than replacing the servo. The only potential problem with this style of servo is the ingress of grit or hair etc. which will affect their performance. Simple regular maintenance will sort this however and from past experience, this style of servo has proved more reliable than an equivalent micro standard rotary type.

The undercarriage is another example of correctly specified materials, flexible but sufficiently rigid not to deform unless provoked, okay crashed!

The Canopy is the only item that may prove fragile. It is made from a very thin moulding. In the past similar canopies on mini quadcopters have easily split but there is a simple mod. I use thin adhesive or masking tape to line the inside of the canopy to reinforce it. Still at £2.00 it's hardly the end of the world if you need to replace it.

Looking at the main shaft it should withstand a lot of punishment, the main gear however looks a little undersized, and especially when you consider the power the brushless main motor is delivering to it but I may have got this wrong and it is purposely designed as a weak link; it's easy to replace and again a very inexpensive spare part.

I am normally obsess over balancing spinning bits, but decided to give the rotor blades a go as supplied. I left the black ones on the head planning to check the spare green pair out later.

ELECTRONICS AND SETUP

The electronics are spread over two stackable boards. One is for the ESCs and the other for the Rx/controller. The quality of manufacture looks great with accurately placed components and quality solder joints. One minor mod could be to secure the Rx aerial with a spot of glue but that is just a personal preference.

The manual has plenty of useful info for setting up the various Tx and even includes the binding process to use a satellite Rx if you haven't done this before.

If you buy the Spektrum version like I did, then the only suggestion I have is the need to support the board where the socket is and carefully insert the plug, otherwise the circuit board could flex and

crack if you just ram it in.

I programmed up my DX7S to the suggested settings and used an older Orange DSM2 satellite I had spare as it was smaller than the Spektrum ones, (I bought my Tx when they were dual protocol - new DSM2 Tx's are no longer available to buy in the UK). There is nowhere specifically designed for the satellite but it just fitted between the frame and canopy after coiling up the lead.

You need to place the heli on a level surface after powering it up and not disturb it until it goes through its initialisation cycle.

The swash-plate alignment was spot on and everything moved smoothly with no odd noises.

Now, not having flown a helicopter for many years makes me an ideal candidate for testing the manufacturers suggested set up, as I don't have the experience to fiddle.

You need to arm the throttle by moving the stick from low to midway and back again, a few beeps and then you are good to go.

FLIGHT TEST

The weather was blowing a gale outside and I was impatient to get hovering I used the garage for test flying it. Easing the throttle to about 50% and it lifted off. It has a slow start feature, gradually building up the RPM. I remember my old Align 250 used to want to spin until the gyro grabbed hold but this didn't happen with the Assault 100.

As expected, I needed to be sensitive with the throttle as it was rapid to respond, but in the hover at about 5ft it was easy to keep where I wanted it. No vibration was evident and the blade tracking looked spot on as well. Never having flown a flybarless helicopter before I found it easier than expected; obviously the flybarless technology was helping out a bit and no doubt the many hundreds of multirotor flights contributed, but it was a pleasant, none too torturous first flight. I was looking forward to getting into a bigger space and throwing it around, especially getting its legs skyward. I have a number of 3D quadcopters (I reviewed the Assault Reaper 500 in 2015) so I was hoping that been able to fly these inverted would help and also having a tail boom would help with the orientation. This would be a first though, inverted helicopter flight; well intentional inverted, but I'll forget about the little mishap I had with the T-Rex 250 all those years ago. Too much enthusiasm and not enough skill was the problem back then.

Finally the weather broke and I could get outside. From the few batteries I had flown inside I realised I needed to soften the edges so I added a little expo to the cyclic; for experienced flyers this probably won't be necessary. One

Substantial main shaft and the swash-plate anti-rotation bracket can be seen in this shot



One of the three linear servos. Pretty quick and the centering is accurate



No specific mount is provided for the satellite Rx but it slipped in as shown here



Good to see a JST connector used for the LiPo. Robust and easy to disconnect



Simply plugging into the frame, the undercarriage can very easily be replaced if damaged



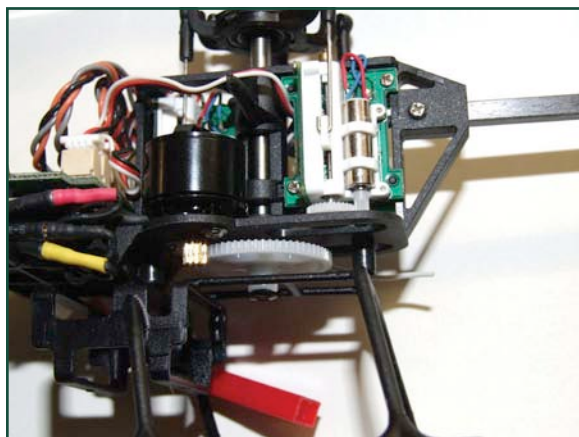
The tail boom is substantial - made from square carbon tube there is virtually no flex

feature I wanted to test was the pirouette compensation. This was new to me but basically it removes the need for a lot of cyclic stick work by the pilot to look good. It certainly worked for me. After a few more batteries getting used to it, I had no problem with loops, rolls or flips and I even managed inverted. Tic tocs were not great but that was down to me not the heli. I let my mate loose on the sticks and he flew it like he had stolen it. The trouble is he started talking a strange foreign language, Piro Flips, Crossroads, Funnelling Funnels and I'm sure I heard Wayne's World. I had no idea what he was talking about or whether the Assault was actually doing them but it was all over the sky and looked impressive. It was clearly capable of far more than I was able to do.

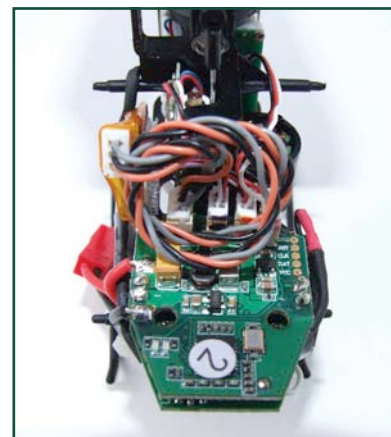
THE VERDICT...

I wouldn't recommend this for a beginner even though the set up info has been spot on, it's just too lively. The only reason I got away with it was because of all the multi-rotor flying I've done, but quickly realised I need a lot more stick time; I will rise to the challenge. For the more advanced flyer, you will have a ball and it won't cost you much. Now I need to find out what a Wayne's World is and can I learn to do one. 

Shaun Garrity



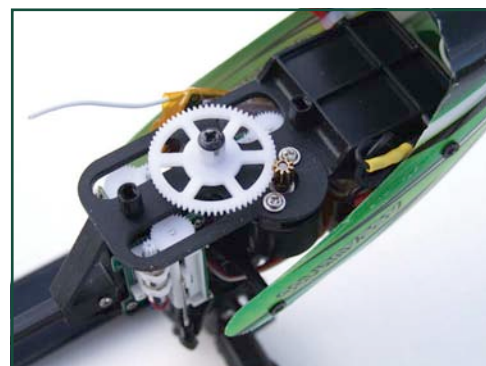
The main brushless motor is a little powerhouse. The windings are neat and it looks well made



Two boards make up the electrics for the Assault



Substantial blade holders should withstand the odd unintentional bump



Very easy to access, the main gear can be changed quickly if damaged

Tech Spec...



Hobby King Assault 100

Type:	3D flybarless electric helicopter
Length:	293mm
Height:	87.5mm
Rotor Diameter:	249mm
Tail Rotor Diameter:	38.4mm
Rotor Blade Length:	113mm
Weight:	79g (including battery)
Battery:	7.4V 450mAh 25C

Turnigy RF Module specs

Input Voltage (via Tx):	5-12V
Operating Current:	100mA
Operating Frequency:	2402-2477MHz
Spread Spectrum Mode:	FHSS
Number of Frequency Channels:	20
Hopping Rate:	240
Internal Battery:	3.7V-150mAh lipoly

RRP:	
RTF Assault 100 (Inc RF Module):	£76.57 (UK Warehouse)
BNF/P&F Assault 100 (DSM2 / DSMX Compatible):	£69.95 (UK Warehouse)

Available from: Hobby King
Web: www.hobbyking.com



Sitting there waiting to be let loose into a fit of 3D mayhem

ALIGN TREX 700N DFC Super Combo

THE ULTIMATE CREATION

IN 91~120 CLASS
GLOW POWER

3GX
Compact

Specification:

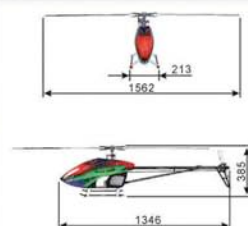
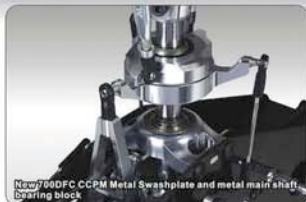
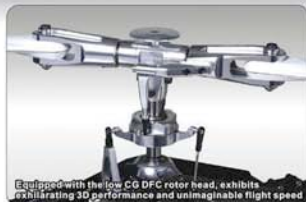
- Length: 1346mm
- Height: 385mm
- Main Blade Length: 690mm
- Main Rotor Diameter: 1562mm
- Tail Rotor Diameter: 281mm
- Engine Pinion Gear: 14T
- Main Drive Gear: 112T
- Autorotation Tail Drive Gear: 104T
- Tail Drive Gear: 21T
- Drive Gear Ratio: 1:8:4.95
- Weight (With Power System): Approx. 4200g

[RH70N01XT]

ALIGN TREX 700N DFC Super Combo

ALIGN

Focus shots:



Accessories:

- TREX 700N DFC Kits Set x 1 set
- 3K Carbon Fiber Tail Boom x 1
- 690 3G Carbon Fiber Blades x 1 set
- 3GX Flybarless system x 1
- DS615 Digital servo x 3
- DS655 Digital servo x 1
- B6T2 In 1 Voltage Regulator x 1 set
- Governor Sensor x1
- 105mm 3K Carbon Fiber Tail Blade x 1 set

THIS IS JUST A SMALL SELECTION OF THE HIGH QUALITY PRODUCTS DISTRIBUTED IN THE UK BY 360 RC TECHNOLOGIES

M470 ^{Super Combo} MULTICOPTER



Compatible with
G2 3 Axis Gimbal
Camera not included

[RM47001XT]

ALIGN

ALIGN



CAMERA NOT INCLUDED

M470
700mm

Align G2 gimbal is specially designed for GoPro. G2 gimbal features advanced control system with superior computational power and the high precision brushless motors provide excellent agility and stability as well as powerful functionality. Support the use of satellite receivers and S.BUS/X.BUS receivers and supports programmability through PC interface, or connectivity to iOS/Android smartphones through Bluetooth. Enable you to enjoy aerial photography.

Align RC are distributed throughout the UK by 360 RC Technologies, Units Z2 & Z3 Radius Court, Maple Drive, Hinckley, Leicestershire, LE10 3BE. Tel: 01455 637151. Email: keith@robbeuk.co.uk.
(360 RC Technologies is a trading name for Robbe Schluter UK Ltd).





ARE YOU READY FOR QUAD RACING?



Align has announced its latest breakthrough innovation – the MR25 Racing Quad which is about to be released.



With all the top and modern electronic technology, the MR25 is equipped with a seven in one flight controller system which utilises a 32 bit high speed processor that results in a highly stable and reliable performance. Providing the most effective way of system and camera setting adjustment app via an iOS and Android system, as well as with Bluetooth 4.0 compatibility featuring low power long distance high speed transmission. The ideal tilt angle camera provides instant tilting compensation in high-speed flight. The main structure is uniquely designed with adjustable motor tilt angle offering flexible compensation, and customizable 256 LED colours through the app. Superb lightweight and anti-collision frame design is also capable of 3D flips by moving aileron/elevator stick to the end. This is the one you definitely need.

Features

- Multi-functional MRS flight control unit with ultra-high-performance 2-Bit processor, built-in ESC, PCU, OSD and Bluetooth function.
- Low aerodynamic drag and clever unique curve canopy features screwless quick latch design for fast battery installation.
- MRS flight control unit with advanced algorithm program control, high precision sensor element, self-stabilizing and positioning performance.
- Built-in power control unit allow to power on the unit simply and indicate the latest battery status.
- Features intelligent LED indicator for turn signal and brake light, multi-colour LED can be switched based on needs.
- Brushless motor features high torque, high efficiency, low power draw, and low temperature.
- Equipped with HD DV camera, true full 1080p 30fps and support micro SD card
- Provides real-time 5.8GHz OSD video transmission up to 1km distance with firmly signal robustness.
- Support either indoor or outdoor image precision positioning function (optional).
- Compatible with iOS/Android APP adjustment setup.



RRP: £289.99



For more information visit the Align website at www.align.com.tw/en/

FULLY CHARGED



The Dynamite Prophet Sport Quad charger is the easy and affordable way to charge your batteries.



This durable and full AC/DC powered charger can be used for surface, air and marine R/C charging purposes. With the ability to handle 1S to 6S LiPo/LiFe/LiIon batteries as well as 1-to 15-cell Ni-MH and NiCd batteries and a range of selectable currents, the Prophet 100W Quad is an asset to any hobby collection.

Features

- 4 Channel Outputs – Charge different battery types and different charge rate simultaneously
- Multi-Chemistry: LiPo/LiFe, NiMH, and lead acid
- Multi-Voltage Charges 1-6S LiPo/LiFe, 1-15C NiMH and 2-24V Pb
- Ultra-Fast Charging – 100 watts x four channels
- Easy to use quad LCD displays
- Includes (2) EC3, (2) T-Type and (1) Rx charge leads
- Includes (2) JST-XH and (1) Thunder Power Balance Boards
- Integrated safety features include, short circuit, reverse polarity, low input voltage and over temperature protection.



RRP: £154.99



Visit the Dynamite products UK distributor's website at www.horizonhobby.co.uk for more information.

EAGLE TREE VECTOR UPDATE



Eagle Tree has announced the new GPS/Magnetometer V2, for its popular Vector Flight Controller/OSD.



The GPS V2 simultaneously receives and monitors both GPS and GLONASS satellites, in addition to other improvements, which can provide the following benefits: Improved position accuracy for more precise hovering and tracking; Improved RFI rejection – especially with noisy video transmitters and cameras; Faster fix time; Up to 24 satellites in view.

The GPS V2 is now in stock, and is included with all Vector systems shipped from Eagle Tree since November 1, 2015. The GPS V2 is also available for separate purchase (p/n VEC-GPS-V2) at the same pricing as the prior module. The GPS V2 is identified by a label on the bottom of the GPS module. This label is also placed on the side panel of the V2 equipped Vector system retail packaging, for easy identification.

The GPS V2 is compatible with all Vector systems, after firmware update. Vector software version 11.78 or higher is required for correct GPS V2 operation. This unit has to be used in conjunction with the Vector Flight Controller. It will not operate as a stand alone unit.



RRP: £41.70 (Includes harness cable) - Part No. RL-VEC-GPS-V2



Available from www.rc-log.co.uk



FAST AND EASY FPV



Hubsan has released its new H501S X4 FPV brushless quad. The built-in 1080P HD camera is tuned to capture stunning pictures and video footage from the sky. Aerial live feed provides an amazing flying and visual experience.



The built-in GPS enables the quadcopter to enter into failsafe mode when the connection to the transmitter is lost. In failsafe mode, the flight control system will automatically control the quadcopter to return to the home-point and land. You can manually switch the quad to failsafe mode directly from the home function switch. Follow me mode utilises the built-in GPS to have the quad follow your activities. Headless mode is programmed as standard for easy control regardless of the quads direction or path.

The multi-function transmitter features a built-in 4.3-inch FPV LCD screen displaying clear 5.8G real-time video transmission from the quad's on-board HD camera. Conveniently placed switches and buttons on the front face of the transmitter for GPS, RTH and camera/video functions make this quad a pleasure to use.

With a stylish and sleek new body shape and LEDs lighting up the feet, the 501S is the ideal entry to a more rewarding FPV and aerial camera footage experience.

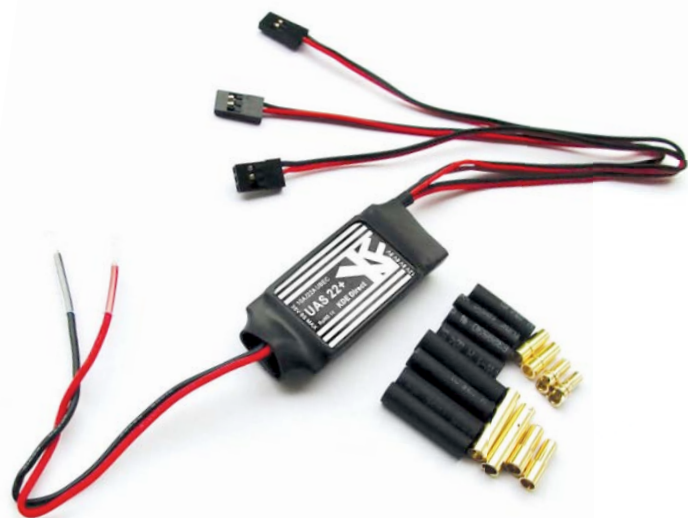


RRP: £369.99



For more details visit the UK distributor's website at www.cmldistribution.co.uk





UNDER CONTROL



The UBEC series of speed controllers from KDE Direct are compatible with 2S - 8S LiPo (8.4V to 33.6V) power systems - allowing for clean, voltage-regulated power for critical flight electronics and peripheral equipment (including 12V aerial photography and high-end sUAS equipment).



The KDE XF-UBEC22 is designed to eliminate the need for an external battery pack, and allows for simple adjustment of the regulated output voltage for direct compatibility to your electronics and power applications. Three (3) power-output leads are provided as standard, preventing the need for any wire-harnesses or additional soldering when using high-powered electronics up to 10A continuous and 22A+ peak currents.

The series is designed for operation of multiple electronics and other high-power systems; commonly needed when linear BECs are not capable of handling the power requirements (such as those included in many off-brand ESCs) or when using high-grade, OPTO-isolated ESCs (such as the KDE Direct XF UAS Electronic Speed Controller (ESC) Series). The UBEC allows for selection of four voltage ranges: (1) 5.0V, (2) 6.0V, (3) 8.0V, and (4) 12.0V - providing voltage-regulated and extremely low-noise power for flight controllers, servos, and even cinema-grade aerial-photography applications. UBECs include 200°C, 20 AWG silicone-wire power-input leads and 22 AWG silicone-wire power-output leads (triple-format) with standard servo-lead connectors pre-installed. $\phi 3.5\text{mm}$ and $\phi 4.0\text{mm}$ 24K matching Bullet Connectors are included for the power-input leads; providing simple plug-and-play compatibility with most power-distribution boards and sUAS applications.



RRP: \$58.95 USD



For more details visit www.kdedirect.com

ALL-IN-ONE



The AR7210BX brings together the security of a DSMX receiver with a BeastX flybarless system in a single, lightweight unit.



At the centre of its capabilities is a high-resolution, six-axis MEMS stabilisation system that delivers flawless response in all types of conditions. You don't need a separate programming interface either. All setup and adjustment can be done with a DSMX transmitter. Optional SAFE software and firmware updates can be uploaded with the Spektrum USB programmer (SPMA3030). Both the SAFE software and programmer are sold separately.



Features:

- DSMX 7-Channel Receiver
- BeastX 6-axis MEMS flybarless stabilisation system
- Perfect for 300- to 500-size electric helis and 30- to 90-size petrol/nitro/turbine helis
- Data and telemetry capable
- Easy to set up and adjust - no programming interface required
- Compact and lightweight
- Compatible with DSMX transmitters with heli programming
- Optional SAFE software sold separately



RRP: £169.99



For more details visit www.spektrumrc.com or www.horizohobby.co.uk



NEW AND IMPROVED



Parrot has unveiled its new Bebop 2, the latest generation leisure quadcopter that delivers improved performance.



Compact, robust, stable and very light (weighing only 500g), the Bebop 2 is equipped with the latest generation of sensors and technology, and boasts an incredible 25 minutes of flying time!

With impressive stability, power and manoeuvrability, even in extreme conditions, Bebop 2 offers very easy-to-use piloting with a smartphone or a tablet via Wi-Fi. It also comes with an embedded fish-eye camera, digitally stabilised on a three-axis framework, to deliver full HD videos with perfect flow and impressive brightness.

Bebop 2 is extremely easy to pilot using the FreeFlight 3 App for smartphones and tablets. Tilting the piloting device indicates the direction (forward, backward, left, right), and the Bebop 2 follows with precision. When the 'landing' button is touched, the drone automatically lands smoothly, whatever its altitude. Bebop 2 is also compatible with Skycontroller Black Edition, an optional RC-like controller providing an extended flight range (up to 2km).

During flight, Bebop 2 offers remarkable stability and manoeuvrability, even in tough conditions, thanks to an autopilot unlike any on the market. Data collected by seven sensors is analysed and merged thanks to the impressive calculation capability of its on-board computer (dual-core processor with CPU quad-core):

To make Bebop 2 the most advanced leisure drone on the market, Parrot engineers optimised the design of the quadcopter as well as its software and hardware battery components. The result is that the Bebop 2 is the most efficient 500g drone on the market, especially with its increased flying time. The official product launch video can be seen at <https://youtu.be/2qdW7ramMr4>



RRP:

Parrot Bebop 2: £439.99 (1 battery included)

Parrot Bebop 2 + Parrot Skycontroller Black Edition: £759.99



The Bebop 2 is available from all major retailers. For more details contact the UK distributor, Flying Toys on 01702 295110 or visit the website at www.flyingtoys.com



TRX 150DFC

[RH15E03XT]



ALIGN



BTF
BIND TO FLY

compatible to
ALIGN / Futaba S-FHSS
SPEKTRUM DSM2 / DSMX
AIR DSM2 / DSMJ / DMSS
System

- **Motor Pinion Gear: 10T**
- **Main Drive Gear: 78T**
- **Drive Gear Ratio: 1:7.8**
- **Weight (w/o Battery): 53g**

Specification:

- **Length: 255mm**
- **Height: 80mm**
- **Main Blade Length: 120mm**
- **Main Rotor Diameter: 271mm**
- **Tail Rotor Diameter: 45mm**

FLEX 150 OFC

[RH15E03XT]



ALIGN



TREX 250PRO DFC
Super Control

[AX019011T]



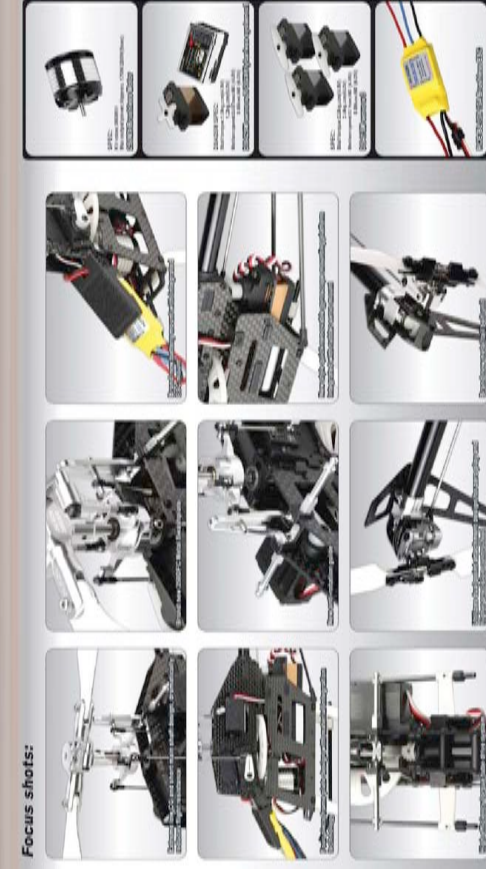
Torque Tube Drive System

Design Features:

- **Green** for CC and gear start design, essentially reduces light resistance, effectively improving 10 performance and speed.
- **Blue** for CC and gear start design, complete assembly increases light refraction, allowing the light to be scattered, resulting in a laser assembly that is much simplified and rigid.
- **Designed specifically for 257** - enhanced system, top-level 257 connecting rod design and assembly design document design Green 257 assembly.
- **Material design document** used to design Green 257 assembly.

- New style gold-invertible extrusion assembly integrated with roller jaws mount, effectively reduces frame's heat-spark for improved maintenance.
- High efficiency large hole dies unique, effectively increases roller performance and decreases power loss.
- Single unit lat tool set with the new counter-rotating lat blade plate makes it easier assembly and improving roller efficiency.
- Different sized and attachment roller for 200, 300, 450mm provides control feed.

TREX 250 PRO DEC Super Combo



Focus shots:

Specification:

- Length: 421mm
- Height: 132mm
- Main Blade Length: 265mm
- Main Motor Diameter: 46mm
- Tail Motor Diameter: 46mm
- Tail Motor Gear: 157
- Main Drive Gear: 207
- Tail Drive Gear: 207
- Drive Gear Ratio: 1:6.4:21

Accessories:

- [illegible]

BL815H / BL855H HV BRUSHLESS SERVO

ALIGN



Suitable for T-REX 550 / 600 / 700 / 800

Designed specifically for helicopters, utilizes brushless motor for fast speed, high torque and super efficiency reaction, allowing helicopter to perform with faster and higher precision. Brand new high voltage brushless servo equipped new CNC machined aluminum case, not only exhibited top of the line servo aesthetics, but also combine heat sink function and best protection for the servo.

**HIGH EFFICIENCY
ENERGY SAVING!**
STAY COOL TEMPERATURE

【HSL81501T】

BL815H HV Brushless Servo

Stall torque	17.0kg.cm(6.0V)	Rating voltage	DC 6V-8.4V
	22.0kg.cm(7.4V)		40°C
	23.0kg.cm(8.4V)		Dimension
Motion speed	0.075sec/60° (6.0V)	Weight	40x20x39.1mm
	0.060sec/60° (7.4V)		80g
	0.055sec/60° (8.4V)		

【HSL85501T】

BL855H HV Brushless Servo

Stall torque	8.0kg.cm(6.0V)	Rating voltage	DC 6V-8.4V
	10.0kg.cm(7.4V)		40°C
	12.5kg.cm(8.4V)		Dimension
Motion speed	0.04sec/60° (6.0V)	Weight	40x20x39.1mm
	0.03sec/60° (7.4V)		73g
	0.028sec/60° (8.4V)		

ALIGN

Super Combo DOMINATOR
T-REX 450L



GPRO
FLYBARLESS SYSTEM

- Main Motor Diameter: 80mm
- Tail Motor Diameter: 37mm
- Drive Gear Ratio: 11:1 (4.24)
- Weight: 230g

- Length: 200mm
- Height: 20mm
- Width: 110mm
- Main Blade Length: 300mm
- Main Drive Gear: 13T

ALIGN



Accessories:

- T-REX 450L DOMINATOR Set x 1set
- 360 3G Carbon Fiber Blades x 1set
- 460MX Brushless Motor(1800KV) x 1
- DS430M Digital Servo x 3
- RCE-BL45X 45A Brushless ESC x 1
- Gpro Flybarless System x 1

A RCE-BL45X 45A Brushless ESC x1
KV value: 180KV
Continuous current: 45Amps
Surge current: 60Amps for 15seconds
BEC output: 5-5V, current 3A(Peak 6A)

B 460MX Brushless Motor x1
KV value: 180KV
Max output power: Approx. 650W(9.0V/sec)

C DS525M Digital servo x1
SPEC:
Stall torque: 2.4kg.cm(4.0V)
3.0kg.cm(6.0V)
Motion speed: 0.03sec/60° (4.0V)
0.02sec/60° (6.0V)

D DS430M Digital servo x3
SPEC:
Stall torque: 2.3kg.cm(4.0V)
2.8kg.cm(6.0V)
Motion speed: 0.03sec/60° (4.0V)
0.02sec/60° (6.0V)

E Gpro Flybarless System x1

Align RC are distributed throughout the UK by 360 RC Technologies, Units Z2 & Z3 Radius Court, Maple Drive, Hinckley, Leicestershire, LE10 3BE. Tel: 01455 637151. Email: keith@robbeuk.co.uk.
(360 RC Technologies is a trading name for Robbe Schluter UK Ltd).

THIS IS JUST A SMALL SELECTION OF THE HIGH QUALITY
PRODUCTS DISTRIBUTED IN THE UK BY 360 RC TECHNOLOGIES

Round 5

Season Finale



THE CENTRAL MODEL HELICOPTER CLUB BASED AT THE GLIDING CENTRE, HUSBANDS BOSWORTH IN LEICESTER PLAYED HOST TO THE LAST F3N LEAGUE COMPETITION OF 2015. THIS LARGE AIRFIELD IS A FANTASTIC VENUE WITH ITS LARGE OPEN FLYING AREA TOGETHER WITH ONSITE CAFÉ AND GREAT FACILITIES. JULIE FISHER REPORTS



We arrived at 9am to set up the field using one of the centre's large flagpoles with windsock as our centre marker. The weather was looking great for the day - hazy blue skies and sunshine with low winds. Perfect! Unfortunately we were missing one of our judges today, Jason Platts, as the date clashed with the North Notts Funfly. Thankfully Paul Bellis stepped into the breach (having sat behind the judges at Cuffley learning the ropes). He was joined by two F3N judging regulars, Jamie Cole and Bruce Naylor. Duncan and Wayne Osbourn contacted me to say that they had had a minor family emergency and wouldn't make it until around lunchtime so we had no choice but to start without them.

SET MANOEUVRES

After the pilots briefing, Matt Hennem was the first one up in the set manoeuvres round. Matt's freestyle and music flights have been steadily improving all season but it is work on his sets which will elevate him from the Sports class to Pro class and he recognises that. Following Matt was Aaron Cole who having made it onto the F3N team for 2016 was raring to go. Similar to Matt, Aaron's sets are the one

round that he really needs to focus on to elevate his position even higher up the Pro rankings. Aaron had chosen high K factor manoeuvres - his square of rainbows and vertical tic-toc eight however were the lowest scoring indicating that more work was needed to improve these two manoeuvres.

Next up was Rachel Plant who having judged at the BMFA Nats had decided she wanted to compete again rather than sit in a judge's seat. All was going well until her fifth manoeuvre (out of eight), the four-point roll backwards, which went wrong halfway through and was aborted. The following manoeuvre, the backward loop, also went awry meaning Rachel had two zeroed manoeuvres. One of Rachel's great qualities is that she picks herself up, dusts herself off and carries on, completing her last two manoeuvres successfully before landing in one piece.

Dave Fisher followed Rachel to the flight-line. Dave had his best scoring Sets round of the season, proving that all his hard work and practise this season is paying off. Peter Foulkes flying his first F3N competition of 2015 (he flew in one F3N comp last year) did well completing his sets before Steven Gerrard took to the skies. Steven's sets scores have gradually been improving since his first



Early morning catch up



Pilots briefing



Getting ready for the first round



First pilot up - Matt Hennem with caller Dave Fisher



Judges deep in discussion

Central Model Heli Club





F3N competition on 2nd August as he has taken on board the comments of the judges and his fellow pilots.

FREESTYLE ROUND

After a short break we started the second round of the day, freestyle. Aaron was up first and flew well though with a raw score of 303 did not score as highly as he had at the Nats. Rachel was next to fly and she flew well utilising her usual graceful style. Third up was Dave scoring 359, scoring highly in Difficulty and Creativity. Peter Foulkes was next up and everything was going well until he had a dumb thumbs moment crashing his Synergy. Unfortunately in F3N, crashing means zeroing the round. Steven Gerrard followed Peter and flew brilliantly scoring highly for Harmony, Creativity and Precision. A final score of 353 wasn't quite enough however to beat Dave's score. Matt Hennem was last up completing the round with a score of 261.

FLIGHTS TO MUSIC

We decided to push on and fly the music round before breaking for lunch. Dave flew first scoring 324. Peter Foulkes was up next flying his reserve machine, a Goblin 700. He had only just fitted a V-bar to this machine and hadn't had time to properly tune it before today's competition so he did very well all things considered scoring 234.

Steven Gerrard was next to fly and had a cracking round scoring an impressive 348. Matt followed putting in a very solid performance which scored him 282. Aaron then flew scoring 314 followed by Rachel pipping Peter by five points. Duncan and Wayne had turned up by this point so he flew his Music round showing everyone how it should be done, scoring 367. Being the true professional that he is, he then went on to fly his freestyle round beating Dave by six raw points.

With only one round (sets again) left to fly, we took a short break for lunch.

FINAL ROUND

Once everyone had been fed and watered we cracked on with what was to be the final round of F3N this year. It was Peter's turn to fly first this time. Sadly he had two manoeuvres zeroed (360° turn with roll and the Waltz) which was unfortunate but not the end of the world. Steven was next to the flightline improving on his first round Sets score by 55 points. Following Steven was Matt whose Double four-point tic-toc was again the lowest scoring manoeuvre of his chosen Sets - this is when time spent flying through the winter can be used to hone those more challenging manoeuvres ready for next season.

Duncan was up next reminding us all why he is the UK's top F3N pilot, putting



Peter Foulkes and Rachel Plant



Rachel with caller Pete waiting to fly



Team-mates for 2016 - Dave Fisher and Steven Gerrard



Dave Fisher preparing to fly



Peter with the result of his dumb thumb!



The event was well supported by club members



Watching Steven Gerrard fly his freestyle round



Aaron Cole flying his freestyle round



Peter with his backup model, the SAB Goblin



Duncan and Wayne Osbourn watching Steven fly

Round 5

in his usual consistent high scoring round. Following Duncan was Aaron whose score in this Sets round only differed by two points from his first Sets round. Rachel was the penultimate pilot to fly. She'd only flown a couple of manoeuvres when a full-size glider came in to land flying right across our flying area (albeit in the distance) and she was asked to land. Once she had installed a new fully-charged battery she was ready to go again and had a better round this time with only one manoeuvre zeroed, the backward loop. Dave was the last pilot to fly. He finished on a high, almost equalling his score from the first round – he'd done enough to comfortably beat Steve and Aaron into third and fourth place respectively, but Duncan had secured his fourth win of the League series and retained the Pro League trophy for 2015.

Once all the scores had been tallied Matt was given the good news that he had finally made it into the Pro class. Sport class pilots are those that score 65% or less of the top pilot's score. For this competition, Matt had scored 66.7% of Duncan's score. Although this meant he did not receive a trophy for this competition, Matt was more than happy with his result having won the Sport League trophy for 2015.

F3N Championship Round 5 Results...

PRO		
1st	Duncan Osbourn	1000.00
2nd	Dave Fisher.....	971.60
3rd	Steven Gerrard	878.01
4th	Aaron Cole.....	783.73
5th	Matt Hennem	666.97

SPORT		
1st	Rachel Plant	481.07
2nd	Peter Foulkes	449.22

PRIZES GALORE

Presentations were made for the day's competition as well as for the 2015 League Trophies for both the Pro and League classes, the winners of which were Duncan Osbourn and Matt Hennem respectively. Our thanks go to Optipower / Optifuel and Align-Trex.co.uk for sponsoring the trophies.

It was then time for the F3N Team Fund-raising raffle to be drawn. The winner of the star prize, an Align 700E DFC Pro Super Combo kit was Ray Konstantinou with ticket no. 0156. Huge thanks go to Keith Wallinger at 360 RC Technologies (Robbe Schluter UK) for donating this amazing prize. A full list of the prizes, sponsors and winning tickets can be found on the UK F3N team website: <http://www.ukf3nteam.co.uk/support-your-team/>



Dave very happy with his Spektrum DX9 transmitter

F3N Competition round five attendees





More info...

For anyone wanting to find out more about F3N competitions in the UK, please like and follow our F3N UK Facebook page: www.facebook.com/f3nuk
Details of all the F3N competitions for 2016 will be posted here early next year. Confirmation of any changes to the optional Set Manoeuvres will also be posted here in January once they have been ratified by the FAI. If any club is interested in hosting an F3N competition, please email me at julie@flyinfish.co.uk

THANKS TO SPONSORS AND JUDGES

I'd like to take this opportunity to thank the F3N League sponsors, Optipower / Optifuel and Align-Trex.co.uk for their continued support. Thanks also to our host clubs who have made us feel so welcome: Little Harlington MFC, Road Farm Heli Club, Bassingbourn, Cuffley MFC & last, but not least, the Central Model Helicopter Club. Our judges have done a sterling job all season: Jason Platts, Jamie Cole, Bruce Naylor, Nigel Revill, Rachel Plant and Paul Bellis. Finally well done to all the competitors who have turned up and given their all and to their supporters who cheered them on. It's been an amazing year. 📧

Julie Fisher



Judges L to R: Bruce Naylor, Jamie Cole and Paul Bellis



The trophies



Pro winners: Duncan Osbourn, Dave Fisher and Steven Gerrard



Sport winners: Rachel Plant and Peter Foulkes



Winner of the Pro F3N League trophy - Duncan Osbourn



Winner of the Sport F3N League Trophy - Matt Hennem



Rachel pleased with her first place trophy

WORDS OF ENCOURAGEMENT

I'd like to end this year's series of F3N articles with some comments from one of the new Pro level pilots, Steven Gerrard...

"My reason for giving F3N a go was I wanted to improve my competition flying. When I started reading the rules and learning the set manoeuvres I realised that F3N is a very structured format."

"My first F3N event was at Cuffley and I used it to learn from the other pilots what was needed to do well in this format."

"Since then I've improved my score at each event having learned something new each time. My flying has improved so much since starting F3N and I was really happy to qualify for team GB to go to Poland in 2016."

"I would recommend F3N to all heli pilots no matter what level your flying is. The lower K factor sets are a great way for a club level pilot to learn and improve. Pick sets you can do and then try to improve your score at each event. After each round the judges will happily explain your scores and coach you on how to improve. You will be amazed at how your score starts increasing with a little practice."

"Most important is that all the events are really fun and relaxed. Don't be scared off by it being a FAI event. The freestyle and music rounds are as exciting as ever. Give F3N a go and hope to see you all in 2016."

Steven Gerrard

Rachel Plant, one of the Sport level pilots gives her opinion of the series in the hope that this will encourage some of you to give it go in 2016....

"So a few words on F3N from a sports pilot's perspective. What can you expect from F3N? Well simply an improvement in your whole flight envelope. It's not smack 3D; it's like 3D with class. It's fun and inviting, with help from the pros and you get to see your skills build comp by comp. Your scores will show your progression."

"It's not instant glory like Helifest or Air, but the skills learned will help you with those events. It's actually quite refreshing that the sort of one shot environment that other comps promote is not the case in F3N. For example we almost always run four rounds, sets twice and you get to drop a round, so any mistakes are not the end of it."

"So if you fancy a more relaxed form of comp, which still builds up your flying ability why not come and have a go??? Hopefully see you in 2016!"

Rachel Plant

Super Combo DOMINATOR TREX 500L

[RH50E07XT]

ALIGN
FLYBARLESS SYSTEM

- Length: 285mm
- Height: 115mm
- Width: 115mm
- Main Blade Length: 425mm
- Main Rotor Diameter: 978mm
- Tail Drive Gear: 36T
- Tail Rotor Diameter: 208mm
- Motor Pinion Gear: 12T
- Main Drive Gear: 154T
- Autotermination Tail Drive Gear: 145T
- Drive Gear Ratio: 11.14:1 (7.4:3)
- Weight (without battery): 1055g

ALIGN
GPRO
FLYBARLESS SYSTEM

Super Combo DOMINATOR TREX 550L

[RH55E09XT]

ALIGN
FLYBARLESS SYSTEM

- Length: 410mm
- Height: 133mm
- Main Blade Length: 550mm
- Main Rotor Diameter: 1248mm
- Tail Drive Gear: 24T
- Tail Rotor Diameter: 245mm
- Motor Pinion Gear: 16T
- Main Drive Gear: 112T
- Autotermination Tail Drive Gear: 131T
- Drive Gear Ratio: 17.2:3.85
- Weight (without battery): Approx. 2.75kg

ALIGN
GPRO
FLYBARLESS SYSTEM

Super Combo DOMINATOR TREX 500L

Accessories:

- 7-REX 500L DOMINATOR Set x 1 set
- 425 Carbon Fiber Blade x 1 set
- 500MX Brushless Motor (600KV) x 1
- DS515M Specialized Servo x 3
- RCE-BL700 Brushless ESC x 1
- Gpro Flybarless system x 1

A RCE-BL700 Brushless ESC x1
SPEC: 1600W/23000W (6sec)
KV value: 400KV
Max output power: Approx. 1600W/23000W (6sec)

B 500MX Brushless Motor x1
SPEC: 600KV
KV value: 400KV
Max output power: Approx. 1600W/23000W (6sec)

C DS525M Specialized Servo x1
SPEC: 2.4kg cm (4.8V)
Stall torque: 2.4kg cm (4.8V)
3.0kg cm (6.0V)
Motion speed: 0.08sec/60° (4.8V)
0.06sec/60° (6.0V)

D DS515M Specialized Servo x3
SPEC: 4.0kg cm (4.8V)
Stall torque: 4.0kg cm (4.8V)
5.0kg cm (6.0V)
Motion speed: 0.12sec/60° (4.8V)
0.10sec/60° (6.0V)

E Gpro Flybarless System x 1

DOMINATOR TREX 550L

Accessories:

- 7-REX 550L PRO DFC Kit Set x 1 set
- 550 Carbon Fiber Blade x 1 set
- 90mm Carbon Fiber Tail Blade x 1 set
- 730MX Brushless Motor (850KV) x 1
- DS815 Digital servo x 3
- Castle Talon 90 Brushless ESC x 1
- Gpro Flybarless System x 1 set

A Castle Talon 90 Brushless ESC x1
SPEC: 2560W/4330W (6sec)
KV value: 850KV
Max output power: Approx. 2560W/4330W (6sec)

B 730MX Brushless Motor x1
SPEC: 850KV
KV value: 850KV
Max output power: Approx. 2560W/4330W (6sec)

C DS815 Digital servo x1
SPEC: 8.0kg cm (6.0V)
Stall torque: 8.0kg cm (6.0V)
23.0kg cm (7.4V)
Motion speed: 0.03sec/60° (6.0V)
0.03sec/60° (7.4V)
0.02sec/60° (8.4V)

D DS815 Digital servo x3
SPEC: 8.0kg cm (6.0V)
Stall torque: 8.0kg cm (6.0V)
23.0kg cm (7.4V)
Motion speed: 0.03sec/60° (6.0V)
0.03sec/60° (7.4V)
0.02sec/60° (8.4V)

E Gpro Flybarless System x 1

EXTREME 3D ESTHETICS

- Length: 1250mm
- Width: 260mm
- Height: 180mm
- Main Blade Length: 700mm
- Main Blade Diameter: 180mm
- Tail Blade Diameter: 30mm
- Motor Pinion Gear: 13T
- Main Drive Gear: 1:12T
- Autorotation Tail Drive Gear: 104T
- Tail Drive Gear: 22T
- Drive Gear Ratio: 16.334:1
- Weight (With Motor): 1.21kg

Super Combo DOMINATOR T-REX 700L

[RH70E11XT]



Castle Edge HV 120 Brushless ESC



High Voltage Brushless Servo



800MX Brushless Motor

ALIGN



GPRO FLYBARLESS SYSTEM

GPRO FLYBARLESS SYSTEM



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- ▶ Superior flying characteristic remain the same flying control among T-REX 280-800 helicopters.
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[RH60E11XT]

US\$1299.99



GPRO FLYBARLESS SYSTEM



Specification:

- Length: 1160mm
- Width: 260mm
- Height: 180mm
- Main Blade Length: 600mm
- Main Blade: 118T
- Main Drive Gear: 118T
- Tail Drive Gear: 22T
- Tail Blade: 30mm
- Tail Blade Ratio: 16.334:1
- Weight (With Motor): 280kg
- Motor Pinion Gear: 13T
- Main Drive Gear: 1:12T
- Autorotation Tail Drive Gear: 104T
- Tail Drive Gear: 22T
- Drive Gear Ratio: 16.334:1
- Weight (With Motor): 280kg

Super Combo DOMINATOR T-REX 600L

Accessories:

- T-REX 600L DOMINATOR Set x 1 set
- 600 Carbon Fiber Blade x 1 set
- 30 Carbon Fiber Tail Blade x 1 set
- 750MX Brushless Motor (530KV) x 1
- BL11HV Brushless Servo x 1
- BL11HV Brushless Servo x 1
- Castle Edge HV 80 Brushless ESC x 1
- Gpro Flybarless System X1 set

ALIGN



A Castle Edge HV 80 Brushless ESC x1

B 750MX Brushless Motor x1

SPEC:
KV value: 530KV
Max. output power: Approx. 4400W/7250W (6s)

C BL11HV Brushless servo x1

SPEC:
Shaft torque: 8.0kg.cm (0.9V)
12.0kg.cm (1.2V)
12.0kg.cm (1.5V)
Motion speed: 0.04sec/60 (6.4V)
0.02sec/60 (8.4V)

D BL11HV Brushless servo x3

SPEC:
Shaft torque: 17.0kg.cm (0.9V)
23.0kg.cm (1.2V)
23.0kg.cm (1.5V)
Motion speed: 0.04sec/60 (6.4V)
0.02sec/60 (8.4V)

E Gpro Flybarless System x1

Align RC are distributed throughout the UK by 360 RC Technologies, Units Z2 & Z3 Radius Court, Maple Drive, Hinckley, Leicestershire, LE10 3BE. Tel: 01455 637151. Email: keth@robbeuk.co.uk.
(360 RC Technologies is a trading name for Robbe Schluter UK Ltd).

REVIEW OF

AS WE START ANOTHER NEW YEAR, IT GIVES US THE CHANCE TO LOOK BACK OVER THE PREVIOUS 12 MONTHS AND REMEMBER ALL THAT'S TAKEN PLACE IN OUR WONDERFUL WORLD OF RC HELIS



Rotorworld 105 - published 4th December 2014

JANUARY 2015



We finished 2014 with a rare nitro-powered helicopter on the front cover in the form of the new Gauji NX7. Rotorworld was invited to an exclusive launch event which meant we were first to test this new machine. Dave Dijkmans reported from a very successful first Bulls Smackdown event in Spain. The Leap 3D quadcopter made a big impact as the first of a few aerobatic quads to hit the market in 2015. And we also tested the latest Logo 550 SX lightweight plastic framed helicopter from German manufacturer, Mikado.



Rotorworld 106 - published 1st January 2015

FEBRUARY 2015



We kicked off 2015 with the new Align 480L quad on the cover which is aimed at aerial photo and video enthusiasts. There was a report from the UK 3D Championships which saw Stuart Mott and Aaron Cole take the spoils. Jamie Cole offered some help and advice on how best to look after your precious LiPo power packs in our Heli Mechanics series. And as Align continued to update its range and release new models faster than we could build them, we featured a full flight test of the latest



Rotorworld 107 - published 5th February 2015

MARCH 2015



A report from the final round of the UK F3N Championship featured regular stars Aaron Cole, Duncan Osbourn and Dave Fisher. The cute little Blade 180 CFX was given a full review and as usual it delivered great performance at a great price. The Sky Hero Little Spyder which is mainly focused on being used as an FPV racer and for entry level aerial photography. And of course there had to be another Align T-Rex review, but this month it was an updated version of one of the most popular machines ever made, the 600L.



Rotorworld 108 - published 5th March 2015

APRIL 2015



As we sped on through the year, March saw our regular report from the Nuremberg Toy Fair which unsurprisingly was full of quads and multi-rotors. We had a great feature on the one of the prosumer models in the DJI Innovations range of UAV camera ships before tackling a spectacular aerial photo shoot. The long-awaited SAB Goblin 380 got its first run out. And we tried the new Spektrum DX9 Black Edition transmitter that adds a stunning new finish, exclusive extras but with the same great features list.

2015



There's no denying that 2015 was yet another great year for RC helicopters with lots of fantastic new products being launched. The technology we're using continues to develop with the majority of models now using electric power. Despite increased features the cost of radio gear continues to fall. There have been further advances in flybarless rotor-head designs and control systems.

And there were lots of multi-rotor drones released onto the market. But it wasn't all about new products, we also saw many events and competitions take place which were well supported, providing further proof that RC model helicopter enthusiasts have never had it so good.

So with so much happening in our hobby we thought it would be a good idea to once again collate the major releases and news from the last year into one article, so here's our review of 2015.



Rotorworld 109 - published 2nd April 2015

MAY 2015



There was another exclusive cover star this month in the form of the Lynx Oxy 3 micro helicopter. It's another small model that offers a full size aerobatic performance. We had a report from the HeliManiacs event which was the first fun fly to start the season in Spain. Jamie Cole tried out the latest version of the AccuRC sim to see what a difference the updates have made and to report on the long term testing. And this month's Align T-Rex was reviewed as of the very neat little 450L Dominator.



Rotorworld 110 - published 7th May 2015

JUNE 2015



The cover star of our May issue was the KDS brand's latest creation, the Chase 360, a new machine designed in Australia by Glen Kimpton with the concept of offering something entirely new. The Assault Reaper joined the growing number of aerobatic quads. Spektrum RC released the new version of its DX 7 transmitter. And our Team Talk series continued with an exclusive interview with one of the world's most successful 3D pilots, Jamie Robertson from the USA and Team Align.



Rotorworld 111 - published 4th June 2015

JULY 2015

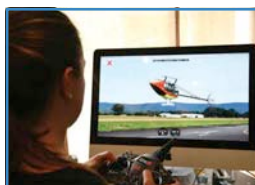


The cover title called it 'the big one' and it most certainly was. The Align 690L quadcopter is aimed at serious aerial photo and video enthusiasts and features a very clever folding undercarriage. This month there were tips on to go about taking the BMFA heli A test. We paid our first visit to Charmouth for the start of the UK's fun flying season. And the great new SAB Goblin Urukay three-bladed heli was given a test by our USA reporter, Tim DiPeri.



Rotorworld 112 - published 2nd July 2015

AUGUST 2015



The F3N League started up again and we had a full report from the first round that was held at Little Harlington Model Flying Club and got the new season off to a flying start. The new neXt flight simulator, designed specifically for helicopter pilots was tested this month. It has a big list of helicopters and multi-rotors from the leading brands that is compatible with Apple Mac computers. We moved on to the Heli B test. And we got to try out the Raptor E700 NGX nitro conversion designed by the UK pilot Neil Gennard.



Rotorworld 113 - published 6th August 2015

SEPTEMBER 2015



Mikado launched a redesigned version of the Logo 600SX. In essence it remains the same helicopter, but with some quite interesting improvements to the frame. Our Team talk series continued by interviewing some of the major team owners and this month it was Keith Wallinger from 360 RC Technologies, the UK distributor of the Align range of helis, drones and accessories. Jamie Cole reported from this year's Zone Format knockout 3D competition. And we investigated what FPV quad racing is all about.



Rotorworld 114 - published 3rd September 2015

OCTOBER 2015



The second ever FAI F3N World Championships took place near Klopeinsee in Austria from 2nd to 12th July alongside the 16th running of the F3C World Championships and the UK fielded a team of top pilots. Nik Johnson reported from the massive AIR 3D competition at which he also commentated. We previewed the latest Blade helicopter release from Horizon Hobby, the 230 S which features collective pitch mechanics combined with SAFE technology. And the new 700L Top was this month's T-Rex review.



Rotorworld 115 - published 1st October 2015

NOVEMBER 2015

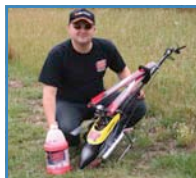


There was something new and different on the cover of the November issue in the form of the Blade Inductrix quad. We had a report from the F3C World Championships which saw Japan's Hiroki Ito take the title for a record fifth time. Our interviews with the team owners continued with Chris Walton from Fast Lad Performance. And we had very interesting review of the Mikado VBar Control that's designed to work perfectly with the company's well proven VBar flybarless system and the new NEO controller.



Rotorworld 116 - published 5th November

DECEMBER 2015



And so to the final issue of the year and the tables were turned on Jamie Cole as he was asked our usual Team talk 20 questions by his son, and new Rotorworld contributor, Aaron. We had a report from one of the best world 3D competition events, the 3D Cup held in the south of France. We took a look at the latest Blade Apache which is an official Boeing licensed product. There was a report from the BMFA Nats that included the F3N League fourth round and the second trial to select the team 2016 F3N European Championships.

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DAVE DIJKMANS REPORTS FROM THE 2015 MALAGA RC HELIADICTOS FUN FLY THAT PROVIDED EVERYTHING YOU COULD WANT FROM A 3D HELI EVENT, PLENTY OF FLYING FUN IN THE SUN INCLUDING QUITE A BIT OF BLADE SCRAPING



The second edition of 3D Heliadictos was held in Malaga over a weekend in late August where all the best pilots from southern Spain gathered together. It was a great weekend of flying with more pilots than expected. The flying site was located about 200m from the beach and we had some great hot weather. At this kind of meeting the main objective is to fly non-

stop with lots of fun, eat too much food and reunite with friends in the hobby.

The event organiser, Marcelo Ortega called me and invited me to this meeting. He told me that this year there would be a DJ and again some of the known pilots from the South would assist, but that it would not be a big event like I'm used to. I told him I that the best moments are often at smaller more familiar meetings. Many of these pilots aren't travelling a lot so the opportunity to see them is not very





big so I looked forward to share good times again. When they confirmed this years date I did not hesitate to go again since I could not miss this event! In Spain the pilots from the South are really nice people in general and the laughs are assured with them.

HOT, HOT, HOT!

The flying site was the same as last year and is not a 'real' club, it was just in the middle of a field about 200m from the beach. It's a very quiet area with plenty of space. Between the flights some of the pilots jumped in the sea to refresh themselves. The heat of 40 degrees Celsius we had to endure with shade, sun cream and plenty of water! This is Spain, the country where the sun lives.

Very early in the morning the flights began. Several of the pilots are real veterans and experienced in the hobby. Also some new pilots who are just starting out and introduced themselves to 3D flight such as Carlos Rossi who took part in this event. The normal pilots have the

opportunity to ask questions of the more experienced pilots and get good advice in flying and setting up their models correctly. It is important that the new pilots attend events like this to learn and overcome the fear of flying in public.

During the whole event we helped the newer pilots to adjust and test their models to get them perfectly tuned. Since I am a pilot that likes to test all new items such as helicopters, engines, flybarless systems that are new on the market! If you ever have a question about how something works, you just call us and we get you an answer.

UNFORGETTABLE MOMENTS

Jose Luis Pardo, one of my fellow heli pilots in Murcia where I live could not miss this event. He's a Spanish 3DX champion and has participated in major events such as 3D Masters and Zone Format. His flying style is fast and low. In my opinion he is a really good pilot and very technical. Jose is an ex Gaui pilot has decided to shelve the sponsors and fly with what you really likes.

This year they prepared some nice shirts with the new event logo



Miguel Martin (El Taxista), did some nice commentary during the event



Just fly for fun. He flew with the Align T-Rex 700 Nitro and the Align T-Rex 700E this year.

Every time someone went out for a flight the rest of the pilots encouraged them to try and get him fly lower and harder. There are always some pilots who get too excited and need to pick up parts from the ground after the flight. Such moments are the ones that you never forget.

Ricardo Ramos joined the event all the way from Portugal and did some great flying with his Raptor E700.

This time I changed the camera for a transmitter. I was flying with TSA Infusion 700N and had big fun scrapping everything on the floor.

Here in Spain nitro helicopters are still very much in use. More and more pilots use them because its fun to fly them, since here in the south of Spain we have very hot days the glow engines just work much better. The electric helicopters and their battery packs suffer a lot in this heat.

Although I took my TSA Infusion 700E and Align T-Rex 700E DFC to the event, the truth is that I only flew with the TSA 700N. When I started in the hobby there were only nitro helicopters available and in fact I have so much fun with them.



The Align T-Rex 600 Nitro of Marcelo Ortega



All kind of models on site, it's nice to see a variety of models during an event



The TSA Model 700 Nitro of Dave Dijkmans with the 700mm Matt Green Spinblades, the perfect combination



The Align T-Rex family of Jose Luis Pardo, spanish 3DX champion



Fernando Fuentes doing his flight with some cheering up from Miguel



Jose Luis Pardo and Marcelo Ortega, nice to see such great fellowship in events



Side-by-side ready to do a duo flight with Dave Dijkmans and Carlos Rossi



Nitro is still very popular here in Spain and Optifuel is working really well in high temperatures



Ready to rock! Unfortunately it ended quickly in a spectacular crash



A nice memento was given to all the pilots, but first we needed to do our best in flight



SPANISH TRADITION

At midday some of the pilots prepared the traditional Spanish Paella. This year there was a battle of two, two Paellas were prepared and we could taste both of them. Really delicious! The Paella is the typical dish from Spain that is known worldwide. Here in Spain one of the important items during an event is the food and the organisation prepared a great meal for everyone.

The flights lasted until the sun disappeared, taking advantage of the last few minutes of light were when some

of the pilots performed their best flights of the day!

The organisation prepared some medals and trophies and to get one you needed to perform a flight at the end of the day. We enjoyed some really good moments since all the pilots wanted to go to the max with their models.

EVENING ENTERTAINMENT

Still the best was to come, Saturday evening! Malaga is known because of the biggest city fair in Spain called the 'Feria de Malaga'. The annual Malaga

city fair in August is an exuberant week-long street party with plenty of flamenco and 'fino' (sherry) so we needed to do a visit to that without doubt. We had great dinner and a long night of typical Spanish Fiesta. During dinner we recalled the best moments of the day and other stories from the past.

This was the second time now that I have travelled to this beautiful city, and I got a great souvenir. We had a great day I hope to repeat it soon. See you in 2016! 

Dave Dijkmans



Align T-Rex 700E of Jose Luis



The Align T-Rex 700E is still the best electric on the market



We could enjoy spectacular flights during the whole weekend



Jose Luis really happy after his stunning flight



Guillermo Mareos Frutos with his Outrage Velocity 50 Nitro, one of the few left in Spain



AreA51-RC team pilot Jose Luis rocking the Align T-Rex 700 Nitro with Optifuel!

Interview with organiser Marcelo Ortega

RW: How did the idea to organise Heliadictos 3D in Malaga?

MO: The idea surged because several friends gathered in a place near Malaga close to the beach called Guadalmar. We fly together every weekend and we are so obsessed with it that we became addicted to the RC Helicopters. After thinking off several names for this group of pilots we decided to call it 3D Heliadictos. I think it's the perfect name for pilots with such an obsession, ha ha!

RW: What makes the 3D events different in the south of Spain compared with other areas in Spain?

MO: Well I think the answer on this question is very simple because in the south of Spain we live the good life! Unlike other areas we always have sun, Spanish Flamenco art and off course the Mediterranean food is just fantastic! Its true that almost everywhere in Spain you can live and eat very well but Spain is a fantastic country liked by almost all the Europeans with a variety of so many things that you can find something for everybody. But we always try to make the pilots feel at home and that they leave with good memories and the experience how we live the life here.

RW: It is now the second year that this event has been held, what is your opinion comparing it with last year?



MO: Comparing this year with last year we noticed off course some differences but it is also true that we have learned from last year and tried to improve this year. One of the highlights is and what we always try to achieve is the fellowship and good ambience between the pilots. All the pilots this year felt like there were at home, we expected more pilots but some of the pilots could not attend for several reasons which was a shame but we realized that the important thing was just to be happy together. This year we had some special momentums for the pilots and trophies which do not have much value but leave you good memories when looking back at it within some years.

RW: What are the ideas for Heli Addicts 2016?

MO: For the 2016 edition we are planning something very new for the pilots and of course we reunite those pilots who wants to be between friends and have a great time. For me the most important thing is that even more friends join the event!!

Mini marvel

SUBJECT: Blade Nano CP S

LOCATION: Secret Blade Helis testing facility

PILOT: Classified

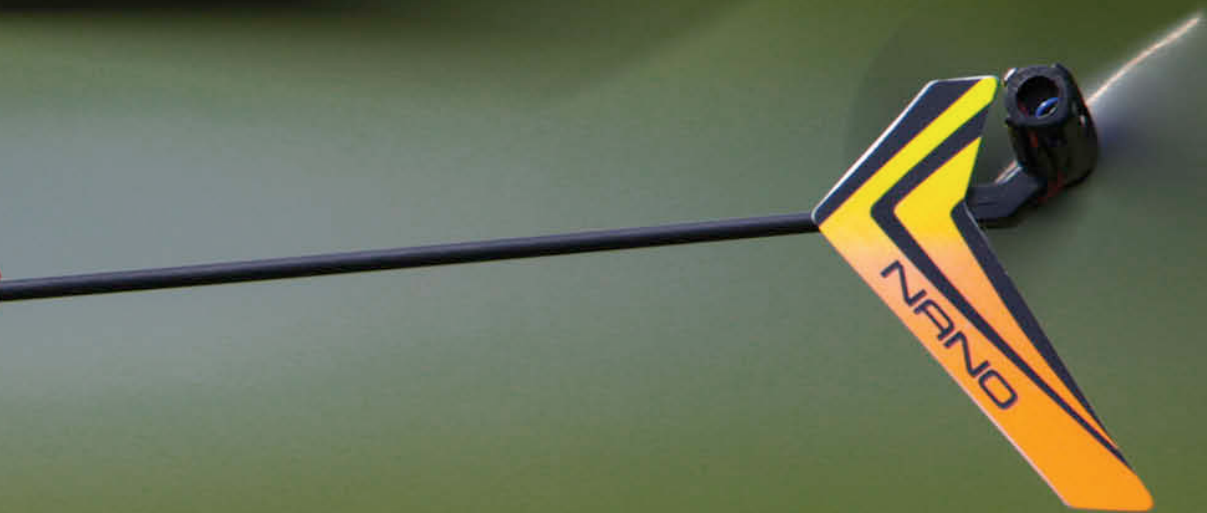
PHOTO: Horizon Hobby

CAMERA: Canon EOS 5D Mark III
(EF70-200mm f/2.8L IS USM lens)



February 2016

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
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22	23	24	25	26	27	28
29						



HEAD RUSH



HOT ON THE HEELS OF LAST YEAR'S SMALL GOBLIN 380 3D HELICOPTER, SAB HAS NOW RELEASED A SPECIAL NEW REFINED VERSION DESIGNED BY THE COMPANY'S TOP TEAM PILOT, KYLE STACY WHICH INCLUDES A GREAT THREE-BLADED ROTOR-HEAD. DAVE DIJKMANS PUTS IT TO THE TEST



The Italian brand SAB caused quite a stir in the 3D helicopter market with its first Goblin 700 model a few years ago. Very

soon after the company released smaller models such as the Goblin 630, 570 and 500. In the beginning of last year SAB released the long awaited and smallest Goblin until now, the Goblin 380. The Goblin 380 retains the famous design and aesthetics of the brand but other than its bigger brothers SAB opted to let the 380 look more at the Goblin Speed. Since world class 3D pilot, Kyle Stacy joined the SAB team he has been designing his own version of the 700 and 570 Gobblins. The main difference between the new 'Kyle Stacy Edition' and the standard Gobblins is that they come with a three-bladed rotor-head and black anodising instead

of silver, something we missed on this little monster. Today's trend is the different mid-size models with powerful motors that enable maximum performance for the pilots. With all the marketing done by SAB we're sure that many pilots will have a Goblin 380 Kyle Stacy Edition in their fleet of helicopters.

SAB marked a real trend in tail boom fuselages with their design that caused many other brands, almost everybody to copy this as an option on their models. Currently, Align, Gaii, Thunder Tiger and others have brought out speed fuselages for their product range, but few have achieved such a nice and attractive design as SAB have with the Goblin. We are sure that this new little helicopter will make a big splash in the market as the smaller sizes are the most sold helicopters at the moment. The new 380 size is one that will be liked by many pilots because

it's a small helicopter, but not as small as a 250 and is easy to carry wherever you want. It can fly in very tight spaces and the cost of crashes is much lower than with bigger models. For those who have not decided to have a Goblin yet, either due to the sizes available or the higher cost, now they will be able to have this amazing helicopter.

The full colour printed manual is one of the best manuals to build the kit, all steps perfectly illustrated which makes it a very easy build



THE BOX

The kit is available in a special designed yellow and carbon fibre colour scheme. The design is extremely attractive and its perfectly visible in flight considering how small this helicopter is. With so many new helicopter sizes it's difficult to fully understand how big it is. The Goblin 380 KSE measures 784mm long and has a height of 224mm. With the Goblin helicopter range we know that it corresponds to the measurement of blade to use on the model, so we know that this small Goblin uses 380mm blades.

The box has obviously a much smaller size than its bigger brothers, but with the usual design of the SAB boxes. Inside the box everything comes very well organised in boxes and bags. When you first open a Goblin 380 box you will be surprised by the few pieces that make up this helicopter. As stated by SAB it has a very simple mechanics. The colour printed manual is well explained and makes the build very easy. Also included in the manual you will find a sheet with all optional upgrades available for this model, such as magnetic canopy supports and much more. SAB also includes a sheet with tips and tricks for a proper assembly of the Goblin 380 KSE.

Dave Dijkmans
enjoying the perfect
little toy with
monster power



You can watch
the video of
our test flight
by scanning
this QR code or
on YouTube at:
<https://youtu.be/sLZMieAbcHM>

The colour scheme
of the KSE in
combination with
the carbon fibre
landing gear gives
this Goblin 380 a
stunning look

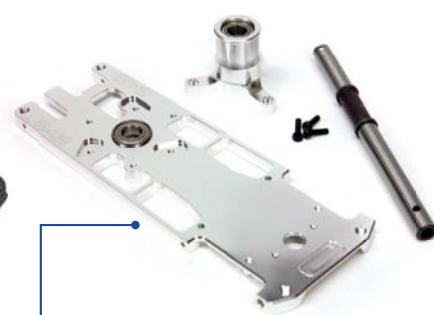




Battery support and the carbon fibre landing gear



The frames are the same as the standard Goblin 380



The main structure of the 380



The plastic servo support and the CF anti-rotation guide



Main and tail pulley, it comes with shims to eliminate any vertical play



First we install the servo supports and the main and tail pulley to the main-shaft

MAIN-FRAME

The frame of the Goblin 380 KSE is made up of two carbon fibre side plates. To hold the frame together you build in the bottom of the frame the plastic battery support and in the upper part the usual aluminium main structure and motor support. The frame is closed with 2.5mm button head cap screws. First you mount the battery support and the tail servo support before you close the frame with the second side. The mechanics are based on the Goblin Speed model. SAB managed to reduce weight and simplify everything to the maximum. One detail which is completely different from the normal Goblin 380 is the landing gear, the KSE edition comes with a carbon fibre landing gear which in my opinion gives the model a much better look than the normal version. This new landing gear design gives the KSE edition an extra aggressive and modern look.

The aluminium main structure plate is manufactured in one piece. The main-shaft with a diameter of 8mm needs to be mounted together with the bearing block. The main-shaft has a special design and any play can be removed by adding some shims when mounting the bearing block. The bearing block is mounted with three head cap screws directly to the main structure plate. Around the bearing block three plastic servo supports are mounted to mount the cyclic servos, optional available in aluminium (H0521-S).

A simple and easy system with three mounting holes depending on which servos you want to mount. For example the MKS HV93 as used in this review needs two screws on each side were for example the Align DS430M servos only need one screw in the middle to mount the servo. The servos have a direct connection to the 120° swash-plate. In the rear of the main structure you need to mount the carbon fibre rotation guide with two screws. To complete the assembly of main structure you now need to install the two pulleys, main pulley and aluminium tail pulley. The Goblin 380 KSE uses a main pulley with 120T. It houses a one-way bearing assembly and two normal bearings to provide smooth operation.

The motor support is mounted in the front of the frame to the main structure using four screws. Once you have mounted the motor to the motor mount you can install the whole assembly onto the helicopter. It is best and easier to install with the motor assembly pushed back towards the helicopter as far as it can go. First put the belt on the motor pulley and then put the belt around the big pulley, rotate the motor several times by hand until it sits at the correct position. Once this is done you pull on the motor slightly to tighten the belt, and once the belt is very tight you tighten the M4 nut first and then the rest of the frame bolts. The kit includes a 21T motor pinion.

The canopy has a very streamlined and



One of the best options for cyclic servos, the MKS HV93 and HV9780 on the tail



Side view of the frame, it's recommended to install the tail servo before closing the frame



MKS servos ready to be installed on the servo supports



The fully silver aluminium HPS 3 rotor-head for the Kyle Stacy Edition



Different from the standard Goblin 380 this rotor-head has gone back to DFC again to simply mechanics



Fully assembled main structure and rotor-head ready to be put back together



Special thanks to Kontronik for supplying this Pyro 380-9 with Kobayashi 90A LV as power house for this little monster, definitely the best option out there



OptiPower 50C Ultra packs are the best choice on the market

aesthetically attractive design. It gives the Goblin 380 KSE the same image as the Goblin 700 KSE Edition, but in miniature. It's held in place by two lock screws mounted in the rear of the frame. The system used is threaded which I personally don't like and can be lost easily in flight. When the first Goblin 380 came on the market I already said that it is a shame that they didn't released quick release canopy support with magnets. Now SAB has it available and this was the first thing I added as option to this model, it will save you lots of cracks in the canopy and loosing the screws. The option part number is H0562-S, it's really worthwhile.

ROTOR-HEAD

Here the real difference lays with the standard Goblin 380. The Goblin 380 KSE comes with the whole new three-bladed rotor-head fully in silver coloured aluminium and retains the same design as its bigger brothers, but not in the black colour, which I think is a wrong decision. Also Goblin has gone back to the DFC style rotor-head on this three-bladed head since due to the simplicity and there is no need for a swash driver. The feathering shafts have a diameter of 5mm and come already preassembled, but as always we recommend you check all preassembled parts, but in this case it was perfectly mounted. The main-blade grip arms are removable by just one screw. The SAB logo is engraved on the blade

grips and centre hub. The manual explains all steps very well and always indicates exactly where to apply grease, oil and thread-lock. The linkage rods of the blade grips connect directly to the swash-plate same as the servos. A direct and precise control is obtained with this direct linkage system. The Goblin 380 KSE kit includes a set of three 360mm carbon fibre blades instead of the 380mm size of the standard Goblin 380.

TAIL BOOM

As expected the little boy of the Goblin family retains the same aesthetic and design of the tail boom as the rest of the Goblin range. This includes a fibreglass boom in a matching colour to the canopy with '380 SAB Heli Division' painted along the side. The transmission system is by belt as all other Goblins with the carbon fibre tail control rod that needs to be assembled by glueing the linkage rods



The new Spektrum AR7210BX was used as FBL controller, we always trust the Beastx technology in flight



Included main and tail blades and the traditional Goblin tail boom

into the ends of the carbon fibre tube. We have noticed that with the size stated in the manual it's a little too short so we recommend adding an extra 5mm to it.

Once the epoxy is hardened you can screw the ball-links in at both ends. The tail boom is attached to the frame with a nylon screw. The kit includes a special tool to tighten this screw. The tail has a very simple mechanical design and is formed by two sides. One side has the vertical carbon fibre fin itself and on the other side a special designed aluminium tail side-plate. On both sides you can find a flanged bearing. The whole tail system assembly is closed with four screws and is adjustable to allow you to tension the tail belt. The tail rotor has the same design as the main rotor. Each blade tail blade grip has two radial and one thrust bearing mounted. The Goblin 380 KSE includes 70mm carbon fibre tail blades.

SETUP AND ELECTRONICS

In our case we mounted the MKS HV93 cyclic servos. The servos are mounted horizontal to the plastic servo supports on the main structure and linked directly the swash-plate.

The tail servo is located in the lower rear part of the frame on the tail servo support and allows us to use a mid size servo. We chose to use the MKS HV9780 as the tail servo. The flybarless controller is the Beastx Microbeast with the Spektrum satellite adapter to avoid more cabling to the receiver.

Special thanks to Kontronik for providing for this review the motor and speed controller. A good combination for the Goblin 380 is the Kontronik Koby 90LV together with the new Kontronik Micro Pyro 380-9 Brushless motor.

The manual recommends a motor with a 22mm long motor-shaft to avoid collision of the shaft with the battery pack. The micro Pyro motor is especially designed to use in the Goblin 380 so the motor shaft has the perfect length and also the flat



X-Ray view of what's below the Goblin 380 KSE canopy, everything has a perfect fit

part on the motor shaft is exactly 6mm to fit the set screw of the motor pulley. We recommend you to use servo braid on the wires of your electronics to avoid wear by friction and the edges of the carbon fibre parts are very sharp.

Since this was the first Goblin 380 I have built with a three-bladed rotor-head I was unsure about the settings and setup, so I took my basic setup for the Goblin 380 as a starting point. We tested various settings and this is how we liked it the most.

We changed menu B into transmitter mode. The dual rates are set to 100%, exponentials on Ail, Ele, Rud to +10% on Spektrum, in case of Futaba it should be -10% and approximate 35% in idle up 2, 38% in idle up 1 and 48% in normal flight mode on the tail. To achieve the

desired roll rate we needed to increase the endpoints (ATV) from 100% to 120% on elevator and Aileron and leave the tail speed to 100%. We used a Kontronik Koby 90LV ESC and we set this to mode 4. In the transmitter I programmed 3 head speeds with the correct ratio as previous explained with a 22T pinion and a 900KV motor, 5.5:1. With this setup you can reach a maximum head speed with of approximately 3,500rpm, this was the range I wanted to fly this helicopter.

The throttle curve is set the following way, we used the straight linear throttle with the Kontronik mode 4 governor. The motor has 900KV and we used a 6S setup with Optipower 1400mah 50C Ultra and Optipower 1600mah 35C packs and the 22T pinion.

The three-bladed head makes this Goblin 380 even more stable than the standard version with two blades



KDE Goblin KSE setup...**Throttle curve:**

	Low	25%	50%	75%	High
Normal	0%	60%	60%	60%	60%
Idle up 1	80%	80%	80%	80%	80%
Idle up 2	90%	90%	90%	90%	90%

Flight mode: **Aprox. RPMS:**

Normal:	3000rpm
Idle Up 1:	3300rpm
Idle Up 2	3500rpm

Pitch curve have been set in all flying modes to -12.5 at low stick, 0 at mid stick and +12.5 at high stick.

TEST FLIGHT

With some charged Optipower 1400/1600mAh 6S packs it was time to do some test flights of this little monster Goblin. My expectations were very high for this new helicopter. With the new magnetic canopy supports available I think this is the easiest to mount canopy I have tried in a long time! With the standard Goblin 380 it was always a time taking business to put the canopy on.

The spooling up sound of this helicopter is really nice, once I lifted it up into the hover I could notice the stability of the three-bladed Goblin 380 KSE despite its smaller size. The visibility and look of the Goblin 380 in flight is very similar to the Goblin Speed. Although we were flying this small size model I had the feeling that I was flying a larger helicopter. Time to do some fast forward speed flights and the model traced a perfect straight line, but when reaching some higher speeds the model started to oscillate so we reduced a little the cyclic

gain on the Microbeast by turning down the dial 1 about 25%. The feeling that this model gave me was very good. Thanks to the exterior design of the canopy and tail it has great visibility in all positions.

With the Kontronik Micro Pyro powerhouse motor and a 90A Kobay Kontronik speed controller the Goblin 380 KSE performed all demanding manoeuvres without even noticing head speed loss. It is true and I have noticed that in all the Goblins I have flown until now it's that they have a very characteristic style of flight and even more with the three-bladed head. It's hard to explain but the feeling is different than with my usual helicopter even when they are setup in the same way. After activating idle up 2 with the maximum allowed head speed of 3,500rpm using a 22T motor pinion. The sound of this little machine became even more powerful and its in-flight behaviour was even more agile and faster. The tail worked really well and held perfectly in all the performed manoeuvres.

I am not a real fan of small helicopters since I am used to flying bigger sized models, but the truth is that the Goblin 380 KSE has surprised me a lot and it's a really fun model to fly.

THE VERDICT...

There is no doubt that the Goblin 380 KSE is a helicopter with design, quality and excellent performance in flight. Its size makes it ideal to fly wherever you want and makes it easy to transport. The Goblin 380 KSE is a small helicopter capable of flying as well as the greatest. The final price ready to fly of this model is not



This is just one beautiful model to have in the hanger as it looks stunning



Tail rotor is kept the same as the standard Goblin but with one more tooth on the tail pulley

There is no doubt that the Goblin 380 KSE is a helicopter with a design, quality and excellent performance in flight

very economical, especially when you want to use high end products, but most of us pilots have some servos, receiver, flybarless laying around to install on the Goblin 380 KSE.

Using a single battery is a great advantage and the smaller 6S packs are quite affordable. It has simple mechanics and is easy to assemble. This model almost does not require maintenance, just the correct lubrication and some regular check-ups. In flight this helicopter can be very docile or a real devil! The dream to own a Goblin of many pilots has come true thanks to the Goblin 380 KSE. We are sure that this is going to be SAB's super sale model for the upcoming year and a great companion for many pilots at the flying field. 📍

Dave Dijkmans

Tech Spec...**SAB Goblin 380 KSE**

Main rotor diameter:	820mm
Main blade length:	360mm
Tail rotor diameter:	192mm
Tail blade length:	70mm
Main-shaft diameter:	8mm
Tail-shaft diameter:	5mm
Spindle diameter:	5mm
Motor size:	 maximum 41mm diameter, maximum height 41mm
Battery compartment:	44 x 44 x 130mm
Weight:	1.48Kg
RRP:	£273.99

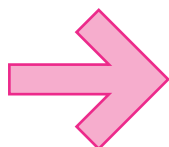
Available from: Specialist RC heli dealers
 UK distributor: FLP Distribution
 Tel: 01226 282 119
 Web: www.flpdistribution.com
 Manufacturer: SAB Heli Division
 Web: www.goblin-helicopter.com



Team Talk



FOLLOWING OUR RECENT SERIES OF TEAM OWNER INTERVIEWS, WE NOW MOVE ON TO DISCUSS SOME OF THE TEAMS FOR 2016. WE START OFF THIS MONTH WITH A LOOK AT THE ALIGN-TREX.CO.UK TEAM PILOTS THAT WILL BE WORKING HARD TO PROMOTE THEIR SPONSOR THIS YEAR



Over the 2014 and 2015 seasons we have covered some of the UK's top RC heli teams as they competed around the globe in various events and competitions. A lot can change over that period and we look to the 2016 seasons at those pilots that we can expect to see and what we can expect from them.

This month we take a look at the Align-Trex.co.uk team. We published an interview with Raj, owner of Align-Trex.co.uk a few months ago which tells you a lot about the guys behind the shop. All of those involved are keen pilots themselves, which includes John Nobbs who did a great job during the 2015 season doing his thing at various competitions with some amazing flights to music.

TEAM BACKGROUND

Established in 2005, Align-Trex.co.uk is an online shop specialising in Align although this has clearly changed as they now stock most major brands available on the market today. The business is run from Slough with John Nobbs looking after the distribution, Raj front of house and really his better half running the show behind the scenes.

As noted above the Align range they stock in full but they also stock most other major brands of helis including Blade, SAB, DJI, Alees, ElyQ, Synergy and a number of beginner options. Better still they have a complete range of stock to back up all those models.

In the words of owner, Raj: *"We pride ourselves on customer focus and try to help all concerned quickly and competitively. Our aim is not to make a quick profit, but to support hobbyist's around Europe to enjoy this great hobby. We are able to help them continue with their hobby after unfortunate breakages and crashes. We hold the majority of stock either in house ready to ship or have readily available stock from our wholesalers who are just a day away."*

"Our interest in helicopters grew from a hobby to a business as we discovered and started believing in the products. We sell what we believe in, we fly what we sell. As flyers we are still learning too. But that is the fun of the hobby; we know and understand everyone is different."

THE TEAM

Through doing this series of articles on Team Talk I have had the pleasure of dealing with a number of the UK's top pilots and speaking with people like Raj. One thing that comes across is that Raj loves this hobby which is evident from his team pilots, who he supports and the people that join the team. Sure, there is a serious side to the team as Raj is running a business but there is also a great sense of team spirit and all of the pilots



feel supported, the net result is a close knit team cheering each other on at competitions or fly-in events across the UK and indeed Europe. One of the team is also a key part of the UK F3N scene, Dave Fisher, and will be flying for the UK in the 2016 European Championships. A great team and a great bunch of guys and girls.

Since we last covered the team in 2014 a lot has changed as pilots moved out of the hobby, some moved to factory teams (and back again)

or had to concentrate on exams for the younger ones, something Raj encourages as a priority over competitions etc. The team for 2016 is John Nobbs, Alex Hawtin, Ali Humphrey, Sam Smith, Dave Fisher, Daniel Rose, Chris Newby, Ethan Williams, Paul Williams, Charlie Hands. These guys all fly The T-Rex 700 DFC Pro in competitions although a few of them do like their nitro machines such as Dave Fisher and of course Raj loves his Goblins.

So let's introduce you to the 2016 team...



Pilot: Chris Newby
Age: 20
Occupation: Electrician - alarm installations
Years flying: 12
Helicopter: Align T-Rex 700E Pro DFC

What they bring to the team:

I don't know where to start here, Chris or 'Newby' is a one of a kind. He is always at the competitions, but is arguably not the best competition pilot in the UK, although he does have a couple of wins under his belt at intermediate level. But my god can he put on a show and get the crowds going with some crazy stuff! I have seen him prune trees from 200 metres and then land the model at his feet, he can beat the crap out of any model and doesn't take himself too seriously. Chris brings the wow and fun factor to the team in abundance. He flies the T-Rex 700E by preference but is just as at home with his nitro machines, you can tell Chris has been flying for 12 years as he has that control of the model which only comes with some serious experience.

Jamie's opinion:

He could be a good competition pilot, but does he want to be?



Pilot: Daniel Rose
Age: 30
Location: Livingston (Scotland)
Occupation: Commercial Unmanned Aircraft Pilot
Years flying: 5
Helicopter: Align T-Rex 700E Pro DFC

What they bring to the team:

Dani has done the rounds at the competitions over the last few years in the sports class and is pressing well although 2015 was a quiet year for him. He is now the most northern based member of the team in bonny Scotland. He has accomplished a lot over the last few years and as well as his occupation being RC orientated, he is also a BMFA instructor, regional examiner for helis. Dani joined Align-Trex.co.uk and the team to support his ambition to improve and to push forwards with his goal of being a competition pilot over the coming months or years. He is also a keen FPV quad pilot which I guess goes hand in hand with his day job.

Jamie's opinion:

Nice chap to boot and hope to see more of him in 2016.



Pilot: Alex Hawtin
Age: 20
Location: Wellingborough
Occupation: Eternal Student!
Years flying: 5, but 10 with RC planes
Helicopter: Align T-Rex 700E Pro DFC

What they bring to the team:

Alex is now the number one boy of the team, at least as far as the 3D Champs 2015 is concerned. Alex has progressed at a phenomenal rate over the last three years, he had a rocky patch where he moved away from his beloved Align machines but came back in 2015 to hit it hard. He did very well throughout the year and nearly smashed the 3D Cup in France but then peaked in the UK 3D Champs to become the number one UK pilot. He has the potential to do really well in 2016 and is one to watch with his own unique style.

Jamie's opinion:

He has matured well over the last few years and it all seems to be coming together, he could be the next world class pilot for the UK, would be great to see him master the F3N comps.



Pilot: Charlie Hands
Age: 15
Location: Weston Super Mare
Occupation: Student
Years flying: 3
Helicopter: TBC! Could be the only non Align pilot, or not?

What they bring to the team:

Charlie is one of the new fresh talents Raj is supporting and he is the newest member of the team. Charlie has the potential to be really, really good in a few years time. In 2015 he placed in the GrassRoots competition and came third in the UK 3D Champs. This will be an interesting year for Charlie if he keeps the momentum on the progress.

Jamie's opinion:

He is the new boy on the team but could give the Chris Newbies a run for their money!



Pilot: Ali Humphrey
Age: 33
Location: Exeter
Occupation: Student! Currently studying Physics PHD
Years flying: 4
Helicopter: Align T-Rex 700E Pro DFC

What they bring to the team:

Ali flies with Chris Newby and they clearly spur / egg each other on, like all good things they come in pairs and can be always seen together, arguably Ali brings Chris to the team, or at least the team events. In his own right Ali has been flying at the comps for the last four years and has been progressing at a steady pace, like Chris he is in it for the fun of it and with the other guys in the team they put on a great show at the events all over the UK.

Jamie's opinion:

With his PHD work behind him I think 2016 will be the year Ali steps it up, by his own admission he could not hit it hard last year thanks to those other commitments. I would also like to see him and Chris do more 'together' not in the marital sense but in the flying sense.



Pilot: Dave Fisher
Age: 49ish
Location: London
Occupation: Full time RC heli instructor and trainer
Years flying: 45+ if you include planes and 25 years for RC helis
Helicopter: Align Trex 700E Pro DFC

What they bring to the team:

Dave is the 'daddy' of the team in pretty much every scene, he has more competitions under his belt than all the others combined, more years flying than all the others combined and knows his onions. Dave used to skydive, but these days is seen doing more dangerous tasks such as teaching people to fly! Dave has F3C and F3N competitions under his belt and has represented his country on a number of occasions on the international stage. He is one of the sharpest at all disciplines, freestyle, music and sets and can probably guide most of the team to success in competitions.

Jamie's opinion:

Dave reminds me of Ned Flanders (not sure if that makes me Homer J Simpson). Dave is super nice, super helpful and will help pretty much anyone with anything if you ask, although I am assured he is pants at DIY. Dave has put a lot of work in over the last five years, especially on the 3D scene and I wonder if 2016 could be the year it all comes together with the right machine and skills.



Pilot:	John Nobbs
Age:	20
Location:	Slough
Occupation:	Distribution Manager for Align-Trex.co.uk
Years flying:	Four, although he has grown up with RC in his life
Helicopter:	Align T-Rex 700E Pro DFC

What they bring to the team:

He brings the distribution! John is another chilled out super helpful chap. He loves his music and has put some awesome routines together over the last few years, I hear he is quite good at the guitar as well. John has helped out a lot with the younger members of the team giving guidance and help on all things RC.

Jamie's opinion:

Love John's 3D routines but he needs to push forward with some more technical stuff and raise that bar in 2016, push on with those more complex F3N moves and bring them to that music round to clean up!



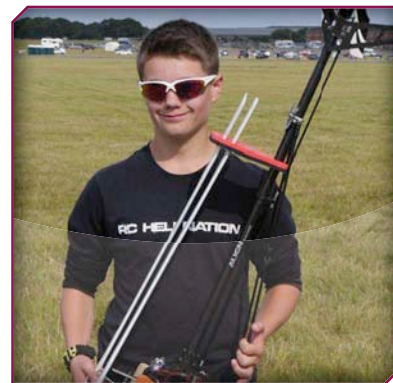
Pilot:	Sam Smith
Age:	21
Location:	Chard, Somerset
Occupation:	Engineering student
Years flying:	4
Helicopter:	Align T-Rex 700E Pro DFC

What they bring to the team:

Sam has been cleaning up in the advanced class for at least eighteen months and now is ready for the Pro class. Sam is a very hand pilot indeed, he is part of the 2012 class (read through this article and you will see what I mean) and he is holding his head high, great awe-inspiring freestyle flights with some pizzazz.

Jamie's opinion:

Sam as with most of the class of 2012 need to brush up on the Sets but your freestyle is cool, love it. Get on board the F3N train and get some tips on how to master it, the Pro level is within reach with amazing results.



Pilot:	Ethan Williams
Age:	15
Location:	Cardiff
Occupation:	Student
Years flying:	3
Helicopter:	Align T-Rex 700E Pro DFC

What they bring to the team:

Ethan is one of the new young talents Raj is supporting on the UK competition scene, not only is Ethan a great and zappy demo pilot he is also a really talented competition pilot and he has proved over 2015 he has what it takes to step up to the plate. It's worth noting his dad who is also hot on his heels with a 3D Grassroots win under his belt in 2015! Ethan is another one to watch, not just now but also in three years time, he could be bringing in the results for the team on an international stage, or at the very least trying to beat his dad who is now by default an honorary member of the team.

Jamie's opinion:

Good job in 2015 Ethan and we look forward to see what the 2016 season brings, our top tips would be to ramp up those sets to bring all of your flying on to the next level.

RAJ - WHY SUPPORT PILOTS?

If you look at the pilots Align-trex.co.uk has picked up and supported they are not necessarily, at least initially, 'known' pilots, but they are all pilots who have something special, a talent that may be untapped and we want to work with that to take them along that journey and to give something back to the hobby. We have some pro pilots like Alex and Dave and we have good pilots on the road to being Pro's, watch this space for the next big thing.

CONCLUSION

I have to say this is a great bunch of enthusiastic and good guys that know their stuff. If you see them around give them a nudge or pump them for advice and information, it's why they are supported and they are more than willing to help. A tip top bunch of guys.

Thanks Raj, next up is Midland Helicopters.

Jamie Cole

High quality glasses designed for RC use from **Radio Control Rotorworld**

The world's ONLY sunglasses exclusively designed and manufactured for RC use.

Designed by experienced modellers, Model Glasses are the ultimate RC accessory.

TEN REASONS WHY RC MODEL SUNGLASSES MAKE SENSE:

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- Polarised Nimbus and Innovation Plus sunglasses have not one but two sets of polarised interchangeables, a light-enhancing set and smoked Cat 4's, all for an amazing £44.99 UK RRP (See the next page for more information on polarisation)
- Worn by many of today's top pilots, including 3D Helicopter Champion Dominik Haegele, plus F3A legends Wolfgang and Roland Matt, and Sebastiano Silvestri



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Ace sunglasses have been specifically designed and manufactured for radio controlled modellers, with interchangeable lenses for different light conditions

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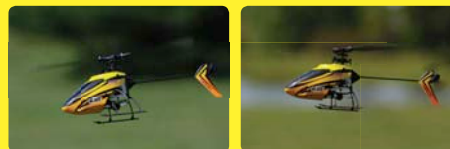
WE CHECK OUT THE LATEST INTERMEDIATE COLLECTIVE-PITCH ULTRA MICRO HELICOPTER WITH SAFE TECHNOLOGY PANIC RECOVERY MODE

The pain-free path to 3D

The CP S looks very similar to its predecessor but there are plenty of changes under the skin



The design of the Nano CP S just works really well, being light and well balanced



The Blade CP S features exclusive SAFE (Sensor Assisted Flight Envelope) technology, a revolutionary electronic flight

envelope protection system that makes it easy for anyone to fly helicopters with confidence. Flight mode versatility means that you can instantly choose the level of assistance and manoeuvrability that's right for you. Plus you get the virtual protection of Panic Recovery mode that will recover the heli to a level attitude for you at the push of a button.

STABILITY MODE

Start off in Stability mode to take advantage of its safety features such as a self-levelling and a bank angle limit. The limited flight envelope allows you to enjoy manoeuvring freedom up to the programmed attitude angles to help prevent you from losing control.

AGILITY MODE

When you're ready for a more advanced flying helicopter, all you have to do is flip the flight mode switch to Agility mode. You get full control authority and stepped up performance for sport aerobatics with no bank angle limit or self-levelling.

3D MODE

Your chance to feel what a real 3D helicopter is like comes when you select 3D Mode from the transmitter. This mode turns up the flip and roll rate so you can explore your 3D capability.

PANIC RECOVERY MODE

If you get into distress while flying in any mode, push the Panic button and move the control sticks to their neutral position. SAFE technology will return the helicopter to a stable attitude.

3D PERFORMANCE

The mechanics features collective-pitch flybarless mechanics for performance that's ideal for when you're learning

to hover as it is when you want to try advanced stuff like flips and inverted flight.

LINEAR SERVOS

The three 2.1g linear long-throw cyclic servos deliver the ideal level of torque and speed for 3D thrills with holding power that's remarkable for its class.

HIGH-SPEED MOTORS

The geared main motor and direct-drive tail rotor motor feature a coreless design that's lightweight with incredible control response.

LIGHTWEIGHT

The palm-size Nano CP S comes packed with performance, yet because it's so light the durability factor goes way above that of larger machines with the same performance. In fact, if you practice over soft grass or carpet, most mishaps cause little to no damage.

SPEKTRUM TECHNOLOGY

Count on the industry-leading reliability of Spektrum, 2.4GHz DSMX technology to deliver high-speed control that's ideal for any flying site environment. 

Tech Spec...



Blade Nano CP S

Main Blade Length:	85mm
Tail Rotor Dia.:	40mm
Length:	197mm
Height:	79mm
Weight:	29g
Tail Rotor:	Direct drive
Experience Level:	Intermediate
Battery:	Lithium polymer (Li-Po) 150mAh 1s 3.7v
	flight battery and USB Li-Po charger included
Flying Duration:	4-5 Minutes
RRP:	BLH2400 - Nano CP S RTF: £109.99
	BLH2480 - Nano CP S BNF: £88.99
	Bind-N-Fly version requires a multifunction 6+ channel transmitter with Spektrum DSMX 2.4GHz technology.

Available from:All good model shops
 UK distributor:Horizon Hobby UK
 Tel:01279 641097
 Web:www.horizonhobby.co.uk
 Manufacturer:Blade Helis
 Web:www.bladeheli.com



The canopy gives the Nano a sharp look that reminds you of larger 3D machines

The rotor-blades are strong enough for aerobatics, but flexible enough to withstand collisions



3D style aerobatics are very possible with the Nano CP S both indoors or outside



FACING THE MUSIC

AARON COLE STARTED FLYING THREE YEARS AGO AND IN THAT TIME HAS GONE FROM STEPPING STONES BEGINNER PILOT / GUINEA PIG, TO BEING PART OF THE UK F3N TEAM FOR THE EUROPEAN CHAMPIONSHIPS IN 2016. HE HAS ALSO TAKEN PART IN NUMBER OF EVENTS OVER THE LAST THREE YEARS, WINNING 3D GRASSROOTS COMPETITIONS AND ALSO THE UK 3D CHAMPS INTERMEDIATES IN 2014. IN THIS NEW SERIES, AARON WILL TAKE US THROUGH HIS PREPARATION FOR COMPETITIONS, LOOKING AT IF YOU SHOULD ENTER, AND WHAT TYPE OF COMPETITION IS RIGHT FOR YOU. THIS MONTH AARON LOOKS AT FLYING TO MUSIC



A flight to music is not as easy as it sounds. The reason for this is because you have to choreograph the whole flight whilst

making sure there is a nice flow between manoeuvres but also it is in time to music; i.e. hitting all the beats. You also have to make sure that you cover all the categories in the competition, these five categories are:

Technicality - you need to make sure that you have some hard manoeuvres in your routine otherwise you won't score well.

Innovation - Make up something new that the judges haven't seen. This way it will keep the judges awake and make them have a clear view of who performed their favourite flight.

Crowd appeal - Make sure that you get the model low to the ground so that the crowd support and possibly could even influence the judges to give you extra points (if there is a crowd appeal section on the judge panel).

Variety - Make sure that you mix it up a little bit. By this I mean don't repeat manoeuvres over and over because this will make the judges and the crowd bored and they will soon lose interest, plus yours won't stand out from the rest.

Structure - The thing to do with structure is to list lots of manoeuvres that you can do

and then put them into a specific order so that they flow nicely and match the beats to the music.

Tempo - this is basically the speed of the music. So if you were flying to opera music, you would fly slow and steady (possibly some big airy loops and rolls). But if you were flying to something like Eminem, then you would speed up your flight a bit so that it ends up looking like the model is dancing to the music. This will make the judges think... "that looks cool" instead of... "wow that's boring."

The above is a good guide to the basics and things to bear in mind, choreographing the flight is the best bet to cover all bases but of course you could just 'wing it' but don't be surprised if you forget stuff or don't do that well.

WHY DO IT?

You should do competitions in general because it's a bit of fun and there are some very nice people around the hobby who are always there to give you a hand if you need it. Also because there is the competitive side of things like rivalries (such as Stu Mott and Duncan Osbourne) and just wanting to win a competition.

The flight to music round is one that many find the most rewarding and fun to do and I have to agree, if you plan it out well you will end up with a great routine and it is flown to the music of your choice.



Duncan Osbourne is a legend with his flights to music and was one of the first to really get it. Flying to it and not just with it

WHICH GENRE OF MUSIC TO CHOOSE?

There is no set formula here, but it may be preferable to choose around three songs in total as detailed below or in some cases you can always fly to one track but some variation is good, we have put some guidelines below on where to start.

To have a decent flight to music round, you need to have at least 3 good, solid tracks to fly to. If you're new to the competition scene, one of the three tracks could be a slow and steady song that you can show smooth control to (maybe some set manoeuvres if you feel confident enough). The second track could be something with a few more beats, and a faster tempo. This is so you can demonstrate that you can fly to beats and hit them well. The third track could be to impress the crowd and judges by smacking the model around, and flying the model to its absolute limit (Something with a lot of beats and a really fast tempo). You want to make sure that you know what the judges want i.e their categories in-order to fulfill the objectives so make sure you read the rules before you start, something I learnt from in this year's 3D Champs.

Some of the most successful flight have taken this to one extreme and then the other, Duncan Osbourn has been known to fly a single track in a music round and he has done some amazing things but with his understanding of music and the intricate changes of music he is probably one of the few that could do that. At the other extreme I have seen Stu Smith mix in 10 tracks to a flight of three minutes and just blown everyone away with super rich content.

If you do decide to do this download yourself a copy of Audacity for your PC or MAC in order to splice the tracks together / mix them. It's a handy tool but will require some practice to get it nailed but do this at the beginning of the season so start choosing now for the summer months.

HOW TO CHOOSE YOUR MUSIC?

This is an interesting one as you have to choices, you can pick your favourite music and try to hit those beats, or a few bits of music you know well, this is a great starting point or you can start practicing those sets and do it to music, what you should find is that you can start to find music that will fit a manoeuvres as opposed to trying to get your model to fit the manoeuvres (hopefully that makes sense).

Above all have some fun with this bit and choose tracks you like and know well as you will need practice to it a lot.

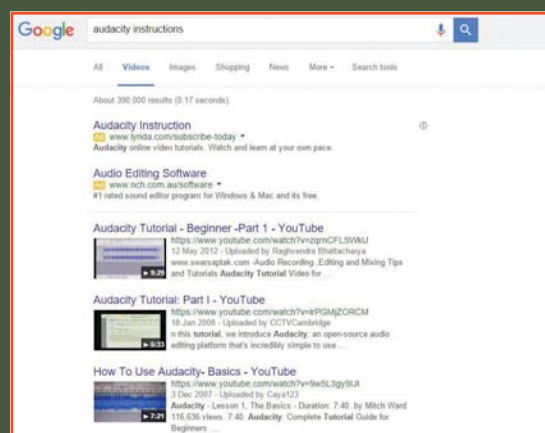
HOW IS A MUSIC FREESTYLE FLIGHT SCORED?

A music freestyle flight is scored in a number of different ways. The first way it is scored is hitting the beats to the music you have chosen in order to score high as well as the reflection of the mood and tempo of the track, arguably, this demonstrates how much practise you have put into the routine; also shows a test of control and whether you are comfortable with the manoeuvres that you are doing.

The second way its is scored is from a crowd appeal point of view. This is one of the ways to go in-order to impress the crowd but also impress the judges in-order to score high (although don't go so low that you hit the floor, that wouldn't score very well!).

There will always be a technical score although this is normally weighted less than say a freestyle round, typically technical will carry only 30% of the score. Technicality is where the practising set manoeuvres comes in, it will help you put in those recognisable manoeuvres but with the aid of the music you can put little twists on thing to make them your own, such as doing the manoeuvres to the beat or changing the speed of the pirouette in time to the tempo as a few very simple ideas, of course you will have had to practised that set move to the music before hand and to have it nailed

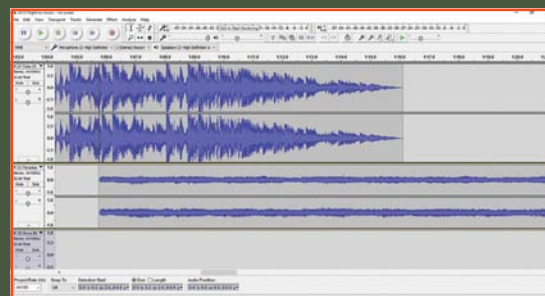
The F3N competitions have a music round of up to four minutes with a minimum of three. There are technical elements to the music round but of course the flow with the music is the highest weighting



There are loads of applications to mix your music, Google it and find a few as well as the instructions to figure out how tube, YouTube is great for that



We use Audacity to mix the tracks and it spits out a nice MP3 version you can sync up to your iPhone or whatever you use to play them back



Once done listen to it lots and lots so you know it back to front



Choreographing the routine into sections is a great way to learn it. The likes of Duncan, Stu Smith and Stu Mott all have routines they fly to, Jamie Robertson adds new elements each time



Jamie Robertson is the master of music, lots of changes of tempo and some great innovative stuff, you can see it's well versed. Watch some videos of the man in action

before you can do it all to the beat. On this note don't do the same thing over and over as repetition will waste valuable time, changes in music throughout the duration of the track will also help with this.

HOW TO PRACTICE AND HOW MUCH?

This is where the simulators like AccurRC come in, my favourite choice for the music practice.

Do as much practise as possible so that you can improve as much as possible. The best way to practise is to go through all the set manoeuvres lists from different competitions and have a go at the manoeuvres. Not only will this help improve your technical score but you can start to them find tracks to fit what you can / can't do.

Another tip we would recommend is that when you're on the sim, try and attack the innovation side of things as much as possible. What I do is I just mess around with the sticks for a while until I find something that looks cool, and then try to learn it in real life. This will separate your flight from the rest (make the judges notice your flight, don't just make them think that your flight was the same as anyone else's). This will give them a clear view of who they think the best pilot was and the flight they enjoyed the most so maybe repeat it once or twice but no more than three times so it shows some controlled intent and not that you're just an ace at winging it!

AM I READY FOR A FLIGHT TO MUSIC ROUND?

Anyone is ready for a flight to music round, get on the sim and get stuck in,, as long as you can fly beyond the hover and also have a piece of music mixed and ready to go. Although you will need to practise the music a couple of weeks before the competition or you won't be the best that you can be. You can't just turn up on the day and wing it (at least if you want to do well that is).

SUMMING UP.

So to fly a decent flight to music, you need to practice a couple of weeks, if not months before in-order to make sure that you cover all the categories (technicality, innovation, crowd appeal etc). Also you need to make sure that the manoeuvres you have chosen to fly flow well and hit the beats well.

One of the best ways to get started is to just start listening to music while you fly, it will help inspire new ideas.

It is always worth running the flight by a couple of flying friends and ask them for feedback, brutal feedback so you can change and adapt, most of all have fun on the sim and at the field.

Next month we will be covering Freestyle. 📺

Aaron Cole

Duncan has his own style and it's very distinctive, the flow and movement is so in tune to the song it looks effortless. Duncan has a degree in music so I think this helps as he understands the intricacies of some pieces, awesome to watch. He would typically have a handful of routines up his sleeve



Stu Mott is another one with a distinctive style, super technical, fast and action packed flights with lots of technical scoring. Stu does most of choreography on the sim and then takes it to the field to fine tune

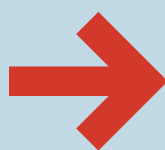


Part 2

Modern Classic



DESPITE BEING DEVELOPED IN THE 1920S, THE GYROCOPTER OR AUTOGYRO WAS MADE FAMOUS IN THE JAMES BOND CLASSIC MOVIE, YOU ONLY LIVE TWICE WHERE HE ASSEMBLED A FULL SIZE VERSION FROM A KIT. IN THE SECOND PART OF HIS REVIEW, SHAUN GARRITY CONTINUES THE BUILD AND GETS READY TO FLY HOBBY KING'S MODERN TAKE ON THE AIRCRAFT WHICH ALSO COMES IN KIT FORM



My favourite part with any new model build is getting some air between the undercarriage and the ground for the first time. I mean yes, deciphering badly written instruction manuals, making poorly manufactured parts fit and digging around the workshop to find suitable replacements for missing parts all adds to the fun however if this is what really floats your boat, you will be very disappointed with the Super-G. The manual is excellent, all the parts fit easily together with no modification and nothing was missing. Okay, being very picky the winglets that fit in the fuselage sides needed a tiny bit of EPP removing,

but would have fit as supplied. You can see from the accompanying assembly photos, it's not much of a job.

Eight bolts and the front fuselage pod, tail boom and undercarriage are fixed up and you nearly have a Gyrocopter. Next I deviated slightly from the manual by fully gluing up the tail plane, fin and end plates prior to fixing it on the tail boom. This is just my preference as I find it's easier to square things up like this but the way indicated in the manual works fine as well. The tail plane / fin assembly was test fitted to check everything was square; the alignment was spot on with no adjustments needed so I glued it in position. Glue on the wheel pants and fuselage winglets and all the foamy bits are done.

DIALLING IT ALL IN

For the radio I used my Spektrum DX7S and a spare Orange full range Rx. There is plenty of room to fit all the electronics in. I used Velcro as it provides vibration isolation and makes removal easy if required. Just one safety suggestion, it states you fit the prop and rotor blades prior to setting up the radio. Most modellers know that many modern esc's have inbuilt safety features to stop them unexpectedly bursting into life, but old habits die hard and propellers hurt. With that in mind, sort the radio out first and make sure the spinning bits spin on command. I had to reverse the pre-rotator switch on my set. The servo arms for the elevator and rudder were fixed in the correct position on the splines for centre; I don't know if this was a fluke but I would like to think it was by design. Mechanically adjust the pushrod length as opposed to using sub trim to get the rudder and elevator centred if required and set up the recommended throws. Another suggestion would be to put a ring of fuel tubing or heat shrink over the nylon clevises to keep them closed onto the control horns.

The manual stresses the importance of having the main rotor disc set at seven degrees to the left with the roll stick centred on the Tx. Included in the kit is a laser etched lite-ply jig specifically to help you achieve this. The jig locates on the ply rotor mast as shown in the photo. This is how I set the head up on mine; first I electronically centred the servos on the Tx and positioned the servo arms so they were at 90 degrees to main shaft when viewed from the side (or as close as you can get them). If you wanted them to be absolutely perfect you could dispense with the included Y lead and set up the roll function using two channels on the Rx and some Tx mixing but I didn't bother. I then adjusted the pushrod lengths so they were equal and the bell-crank on the rotor head was at zero degrees tilt. I then set the seven degree angle using aileron sub trim. There are probably a number of other methods that give equally good results. Easier to do than try to put into words!



Eight bolts and you nearly have an Autogyro



I pre assembled the tailplane, fin and sub fins as I found it easier to square everything up



Side fins and wheel pants glued in position. Make sure they don't bind on the wheels



The tail group glued on with no adjustment necessary



Plenty of space is available to locate all the electronics



As detailed in the text, the roll servo output arms were set at 90 degrees to the main shaft



Set up jig to get the important seven degrees tilt on the rotor head



You can see how the corner of the cockpit has been pulled in with the heat treatment described in the article



I found that when the EPP just started beading as shown, this was the correct temp to reshape the canopy



The supplied APC style prop wasn't that far off balance



The spinner back-plate was out of balance like the prop but playing around with the orientation it came out spot on



Slackening off two of the rotor blade screws allows them to be folded back for easy transport



How could you not be tempted? Futuristic styling, sleek and different enough to cause a stir at the flying field

TWEAKING THE CANOPY & BALANCING THE SPINNING BITS

One minor bugbear I mentioned last month was the fit of the canopy. You have a couple of choices, don't let it bother you (the overhang actually makes it a little easier to remove), or very carefully warm the inside with a heat gun and squeeze gently to pull it in. Do not heat the outside though as it will ruin the smooth surface when the epp beads expand. Actually I found that just when the inside surface beads started to swell was the correct temp and it stayed in its new position when cooled down. It is very easy to mess this up though, so if you do have a go be careful and don't blame me if you need to order a replacement.

I balanced the prop, spinner back-plate, rotor head and blades and then rechecked the rotor head after bolting the blades in place. As previously mentioned, the internet is awash with info on how to do this if you are unsure. It is worth spending the time though, it will fly better. One final check of the C of G and the build was finished.

ADVICE FROM A FRIEND

Autogyros have their own unique flight characteristics, a combination of fixed wing and heli traits, so it's worth doing a little pre flight research. Speaking with a fellow modeller who is a diehard Autogyro flier, he told me that *"rudder is your friend and roll isn't, you need to combine controls and balance them to execute predictable turns"*.

He also said the speed is helpful, in his words "the faster the better" and "you will find that depending on the direction of rotation of the rotors, it would need little rudder input in one direction but lots the other way to turn". There was a final bit of advice..... "Don't get sideways with the tail down because this can result in the need to order spares before you get flying again".

With all this new info in mind and having no reason to doubt it I headed out to the patch.

TIME TO FLY

At the field, I spooled up the rotor and I'm glad I took the time to balance it as very little wobble and shake was evident; I have seen some on-line videos of Super-G's positively vibrating. I was advised to let it have a long take off run and ease it off the ground, always taking off straight into wind.

Time to get upstairs then; when the blades were spinning as fast as the auto start allowed, I advanced the throttle and gave it a helpful push to get it rolling because the grass strip really needed mowing. Accelerating faster than expected and with a slightly extended take off run, suddenly I was airborne. Remembering all the advice I started a gentle turn and not to forget to switch off the auto start. There is a one-way bearing so leaving it on doesn't matter, it will only flatten your LiPo and wear out the



From opening the box to this in under two hours. If you've never owned an autogyro before now's the time to have a go

brushed motor quicker. I soon got to grips with the different handling. You definitely need to balance Yaw and Roll and always remember it's possible to stall the rotors (as forward speed and airflow over the blades creates the lift) and difficult to recover from that situation, unlike a heli's rotors that are powered. It did appear to resist rolling a little the faster it flew though, but rudder always was effective.

THE VERDICT...

It looks impressive in the air and exploring the flight envelope is interesting. As I needed to get plenty of photos, I held back on the temptation to try any aerobatics just in case my enthusiasm exceeded my current level of experience on type. With a bit more practice, I should be able to get the landing speed even slower and let rip with the aeros. What a great new toy, not only because it was different and enjoyable to fly but because I had to learn some new piloting skills. However I wouldn't recommend the Super G for an inexperienced fixed wing or heli pilot due to its different handling characteristics. One problem with a predominantly white model is the orientation at distance and I will be putting some Leds on mine to help out especially as a friend recently had an unscheduled landing (read as a crash) because of this. He was impressed with the strength of it and expected there to be a lot more pieces when recovered. His only comment was the main shaft appeared a little weak as his had bent, but if this was stronger, something else would break and quite possibly cause greater

damage; definitely keep some spare rotor blades handy though. I have read that you can improve the performance such as shortening the take off run and its aerobatic ability by using 3rd party wood blades from Aerobalsa and adapting the metal head upgrade from the Auto G available from HobbyKing. Another thing to try in the future. ☑

Shaun Garrity

Tech Spec...

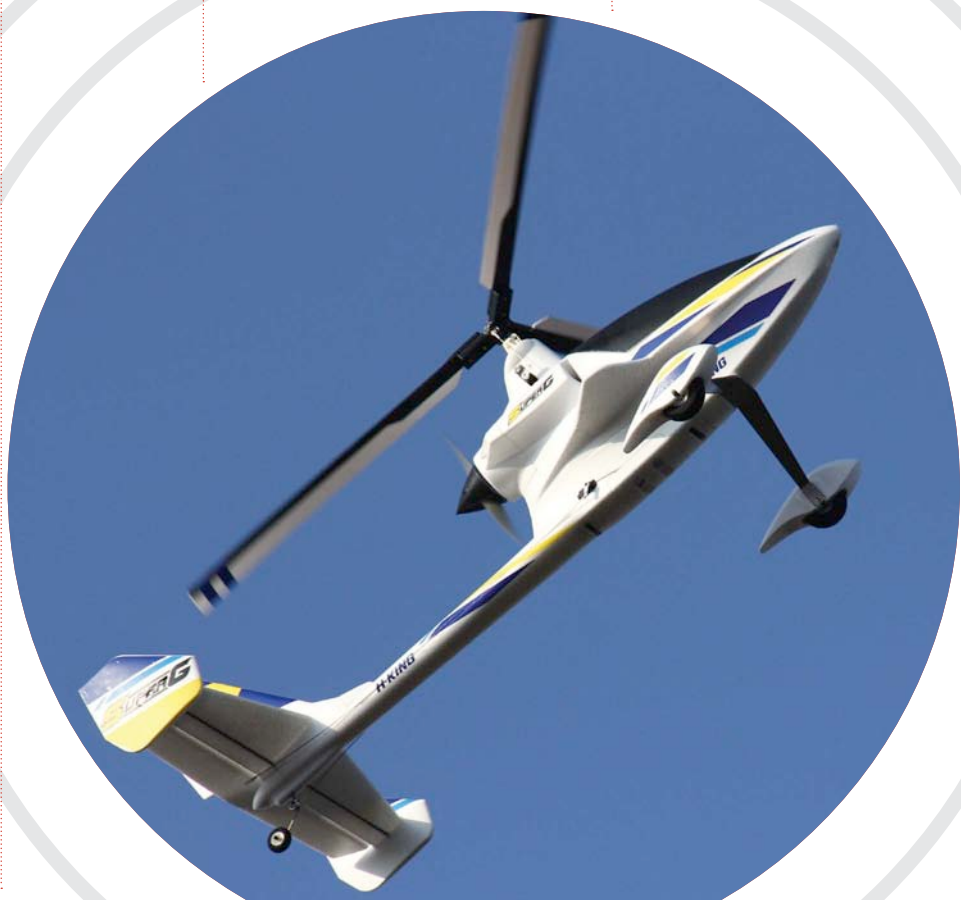


Hobby King Super-G autogyro

Rotor diameter:	1,080mm
Length:	1,223mm
Height:	489mm
Weight:	1,650g
ESC:	50A
Servo:	9g x 2, 17g x 2
Motor:	3648 850kV
Requires:	Five-channel transmitter and receiver
	4S 14.8V 2,600-3,000mAh LiPo
RRP:	£96.37 (from the UK Warehouse)

Next time...

Last time I mentioned that I intended to use the Guardian 2D - 3D stabiliser in the Super G but due to lack of decent flying weather, I ran out of time. It makes sense to get to know how it flies first anyhow before trying this out. I'm tempted to put my Mobius and FPV dock on it as it appears vibration isn't the problem I thought it could be. I'll report back on this as soon as I have a chance and the weather starts behaving again.... I've got an urge to find another Micro-Mold Wallis now (spelt correctly this time... spell checkers, don't you just love 'em.. not!) and finish what I started all those years ago.



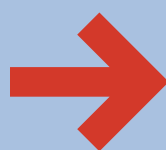


Getting Started

LOOKING FOR A NEW HOBBY? ONE THAT'S GUARANTEED TO TEST YOUR METTLE AND DELIVER SATISFACTION IN SPADES? FLYING RADIO CONTROLLED HELICOPTERS CAN OFFER PLENTY OF THRILLS AND SPILLS AND OUR NEW SERIES WILL SHOW YOU HOW TO GET STARTED



Blade helis come in all shapes and sizes suitable for all ages and abilities, so well worth checking out at your local model shop



As a fixed-wing model flyer of 25 years standing and a rotor blader for the last eight, I can honestly say that learning

to fly model helicopters has been one of the most rewarding experiences of my quarter century at the sticks. I'm a great believer in the old adage that 'nothing worth doing is easy', and after wrestling my Hirobo Shuttle through two long years of learning, the satisfaction of finally being able to steer the machine through a series of flowing circuits and hovering manoeuvres was immense. It was a goal that I'd dreamed of achieving for some considerable time prior to the event, yet when I finally bit the bullet and started learning, I really couldn't understand why I hadn't done it before. In the early days I well remember using the relative cost of helicopters as an excuse for my inaction, although looking back on it I was probably more concerned about my ability than anything else. I, like many others, had

heard countless stories of how difficult model helicopters were to fly, indeed, astoundingly, some of these came from experienced model helicopter pilots themselves! The very people who ought to have been encouraging folk like me.

With this in mind, it's very important that we get one thing clear right from the start: Having the ability to fly a radio control model helicopter is a skill that anyone can learn. I'm a very average fixed-wing flyer, I don't fly 3D and my pattern aerobatic ability won't win me any competitions. If I can fly model helicopters, then you can, too! That said, flying helis is a skill that needs to be practiced in much the same way as you'd learn to play a musical instrument. To master the art, then, you'll need to be in it for the long haul. Of course, there'll be hiccups along the way, and whilst you may struggle with certain aspects, others will seem dead easy. Determination will get you through and if you relax, take your time and don't set yourself unrealistic targets you'll find the whole experience thoroughly enjoyable

and immensely rewarding. I did!

Let's touch on another aspect that can sometimes put people off. Cost! Are helicopters expensive? Personally, I don't believe they are. For the pleasure I derived from my Shuttle all those years ago it owes me nothing. I used it as a primary training tool, flew it for a total of four years, dug it out for my B Certificate, wrapped a scale body shell around the mechanics, and eventually sold it. It's arguably the best £500 I've ever spent and I don't begrudge a penny. That was back in 2000, and bearing in mind the relative cost of everything has increased over the last eight years, a beginner can still buy a quality helicopter, engine, radio and gyro package for the same money. Granted, if you're starting from scratch you'll have additional expenses, but they're the sort of costs you'll be able to swallow as you assemble and prepare your model for flight. No, sorry, if you ask me (or come to that any golfer who pays £1,000 a year in club fees) model helicopters are cheap.

TAKING THE PLUNGE

So, we've established that anyone can fly a model helicopter and, more to the point, it doesn't cost an arm and a leg. Heck, what are you waiting for? Why not join me in this spot over the coming months as we venture step-by-step through the various stages and decision-making processes of buying, building and flying your first model helicopter. We'll discuss joining a club, choosing a model, building it, trimming it, setting it up, first flights, training and, of course, essential items of equipment you'll need along the way.

At this point I'm sure I'm right in saying

that making a purchase is one of the first things you'll be keen to do, however there are one or two things you ought to consider before setting foot in a model shop. Let's start by discussing the cheapest yet most important weapon a beginner can have in his arsenal: Good advice! Without it you'll have a fight on your hands and one that statistically you're likely to lose! Having someone to ask when problems arise is often all it takes to keep you progressing at a steady pace through the building, set-up and flight training process.

Model shops, books, magazines and the Internet are all possible avenues of knowledge although, frankly, the very best place to go is your local model flying club. Most of us have one that's within an hour's drive of our home, indeed if you pop into your nearest model shop (without your wallet!), they'll be able to point you in the right direction. Failing that, the British Model Flying Association has well over 600 registered clubs on its books and upwards of 35,000 members - give the BMFA a call on 0116 244 0028 and they'll happily supply you with a list of local contacts. You can also see if there's a club near you by visiting www.BMFA.org.

It's difficult to over-emphasise the importance of joining a flying club, although do check that it has a knowledgeable helicopter following in its ranks before you sign up. You'll need to be amongst members who can competently trim, set-up and fly a .30-size machine. Better still, though not quite as common, are specialised model helicopter clubs where the advice will almost certainly be up-to-the-minute and of the highest calibre.

Gorgeous as it is, this Align T-Rex 3D competition aerobatic heli represents a significant investment. By all means have one, but learn to fly first



Hirobo's Shuttle is probably the most successful 30-size training helicopter of all time. It's been decades in production, yet remains a good choice



This Shuttle belongs to a pal of mine who took up helicopter flying a few years ago. Adopting the relaxed attitude that the learning process will take as long as it takes, he has become a very solid heli pilot



Aimed very much at the toy market, small electric palm 'copters such as this neat Hughes 300 lookalike, are great for a bit of cheap fun, but are completely unsuitable as a training tool



The Blade range of helis offers an ideal progression path



Having located a friendly group, make a point of attending a regular flying session to chat with members. Take a look at the models and equipment they're using and ask for advice about suitable training machines. Take note of the answers, act on them, and you'll be one step ahead of the game before you've even started. Why? Well, first and foremost you'll have a list of products that are recommended by the people who actually use them - not (with the greatest of respect) the opinion of the Saturday morning lad in the model shop whose first love is RC monster truck racing followed a close second by his sales bonus. Secondly, when you eventually arrive at the field with your new model, the club members will respect the fact that you've taken their advice and will feel duty-bound to help you set the model up and get started.

On this latter point, it's a fact that having someone knowledgeable on hand to perform the first few flights of your new helicopter will increase your chances of success ten-fold. And that's no understatement! Flying a model that's badly set up and poorly trimmed is a little like driving a car that won't steer straight - destined for a crash!

WHAT TO BUY?

As you'll doubtless be aware having flicked through the pages of this magazine, model helicopters come in a variety of shapes, sizes and configurations. Examples of indoor, outdoor, electric and IC (Internal combustion) machines fill the adverts, with prices for beginners' packages ranging from as little as £100 up to our benchmark £500. Of course,

you may be wondering why you have to spend £500 when, seemingly, you can get something equally suitable for learning by paying just £100. As always the answer to that one is in the cost, i.e. you get what you pay for. Spend £100 on, say, an indoor electric contra-rotating machine and, good as it will undoubtedly be, you'll be buying a compromise. Outdoor flight is not a practical proposition with one of these machines and if you're serious about learning to fly model helicopters you'll need to purchase a suitable outdoor model. By all means have a contra-rotating job as well, they make superb practice machines in the early stages, however, don't be under the impression that it'll teach you all you need to know, it won't. We'll look at these models in greater detail as the series progresses but in the meantime we're going to focus on getting you trained up for your 'B' Certificate in the very shortest possible time. For that, then, we're going to need a helicopter that can handle the extremes of our unpredictable English weather.

Walk into your local model shop and the range of helicopters that confronts you is likely to be huge. In short you'll see products that vary in size and complexity from small indoor electric machines right up to large .60 and .90 size two-stroke models. Lovely as they all are, there's really only one group of helicopters worthy of consideration for the committed beginner, characterised as 30-size machines, i.e. those typically powered by a .30cu in (5cc) engine. Interestingly, in the beginners' series I penned for Rotorworld back in 2003, I gave the same advice as I'm about to give you now,



30-size helicopters are not just trainers, desirable scale models such as this Hirobo Lama are also available, though not recommended for learning

but with one significant omission. Back then I made scant mention of electric helicopters or flybarless stabilisation systems. Overall cost, allied to limited duration, were significant disadvantages at the time and although electric helis were clearly going places, back then they hadn't quite arrived. Not so now. When, in the following paragraphs, I refer to 30-size models, you must assume that I speak of models with a rotor diameter of between 1,000 and 1,200mm, whether powered by an electric motor (500 - 550 size) or a regular two-stroke glow engine.

What is it that these models have going for them? Well, having made their mark back in the late eighties and early nineties, 30-size models have just about the best support from manufacturers of spares and accessories. This makes replacement parts fairly easy to find and generally pretty cheap. Buy a model in this class and you'll find that it will also take standard servos and components, it'll build quickly, be more stable in the air than a smaller machine and, as such,

You have to aspire to something. For some, just hovering is enough, but you may soon find yourself trying something a bit more advanced

Once you've learned the basics of control, the model helicopter world is your proverbial oyster. F3C competition aerobatic flying is just one avenue you can explore, though don't be surprised if you get addicted





easier to fly. Moreover, it'll be robust, cheap to operate (low fuel costs) and, should you wish to practice aerobatics later on, will be capable of seeing you through the basics. As if that's not enough, 30-size models are big enough to see at a distance (important when practicing early circuit work), yet small enough to fit in the boot space of a very modest car. Finally, when you've finished your training and the heli's looking a little tired, it's likely that you'll be able to wrap a scale body shell around the mechanics (as I did) and let the old girl retire gracefully flying circuits and bumps.

That's my opinion but, of course, there are others who will confidently advise that learn with the biggest helicopter you can afford, i.e. a .50 or even a .60-size machine. In truth this isn't necessarily bad advice for it's a recognised fact that the larger the model the easier it is to fly. However, in order to consider helicopters of this size, you'll need to prepare yourself for a cost differential of about double. A larger helicopter requires a bigger engine that drinks more fuel, it'll need powerful servos, a NiCad battery with a greater capacity, a larger muffler, and so it goes on. As I say, you could probably take our \$500 start-up price and nearly double it before you even set foot on the flying field. And we haven't even spoken about the intimidation factor of such a machine! It's bad enough coaxing \$500 worth of investment into your first hover, doubly so when there's a grand at stake.

SPARE A THOUGHT

As important as the size, cost and appearance of your helicopter clearly is, there's another aspect of the purchase that you do well to consider: the availability of spare parts. If your local model shop doesn't stock a good range of back-up bits, or is pretty unreliable in fulfilling orders, you could easily find yourself in the frustrating position of being unable to fly while you await a parts delivery. In extreme cases even distributors have been known to run out of spares and, although rare, this can involve a delay of weeks or even months for a container ship to dock. As you can see then, choosing a helicopter brand that's popular and well serviced by the trade is very important, even if it means spending a few extra pounds.

This, of course, calls to question the merit of buying second-hand where, often, the models you see for sale are tired, tatty and discontinued. I think I'm right in saying that Japanese manufacturers such as JR, Hirobo and Thunder Tiger are required by Japanese law to provide parts for a period of five years after the discontinuation of a product line. Even so, spare parts are likely to dwindle as the months pass and it stands to reason that you'll inevitably end up waiting for that container ship at some stage in the future. That's not to say second-hand models can't be good value, they most certainly can. However, my advice to anyone

Aerobatic flying isn't for everyone, indeed once they've learned to fly many decide to concentrate on models such as this stunning JR Augusta A109



The T-Rex 500 is a very good and popular aerobatic model that will last you a long time



The T-Rex 550 is slightly larger and so offers a bit more stability

contemplating a purchase of this nature is to inspect the goods before you buy and if necessary have your prospective machine checked by someone with a bit of experience. Like anything that's mechanically and electronically complex the condition of the model will speak volumes about its general state of repair and airworthiness. A clean and tidy airframe is likely to have been well maintained and serviced. On the other hand, something covered in dirt and congealed oil almost certainly won't and should be treated with the utmost caution. Finally, on the second-hand thing, don't buy anything unless it comes with an instruction and assembly manual. At the very least make sure you know where you can get a copy, for when you eventually have to replace those worn or damaged parts, you'll be lost without it.

TIME'S UP...

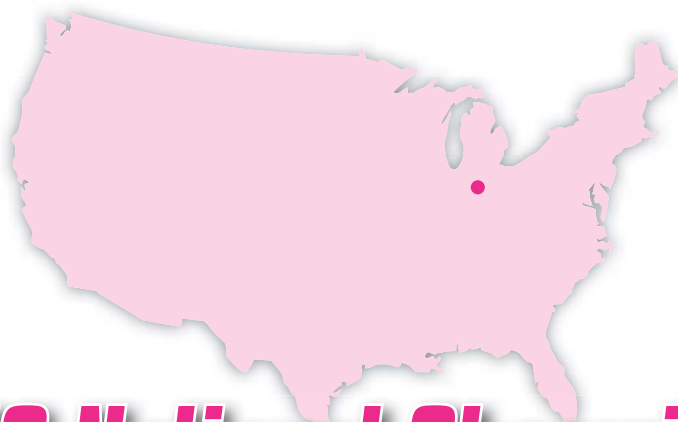
That's me done for the time being. We've set the scene, imparted a few words of wisdom and, I hope, encouraged you to consider taking up this fascinating, absorbing and hugely satisfying pastime. The route to mastering model helicopter flight will deliver mixed emotions, there'll be moments of despair when things aren't going your way, balanced by feelings of elation when goals are achieved and progress is made. Ride the highs, suffer the lows and when you can eventually fly your heli through a 'B' Certificate schedule you'll have acquired a skill that'll return your patience and determination with satisfaction by the bucket-load. 

Next issue...

In part two we'll buy a helicopter, engine and radio, then take a look at the basic accessories you'll need in the early stages. See you then.

The 500 size helicopter has become a very popular training machine





**ROTORWORLD'S US
CORRESPONDENT, TIM DIPERI
REPORTS FROM THE 2015
UNITED STATES HELICOPTER NATIONAL
CHAMPIONSHIPS IN MUNCIE, INDIANA.
PHOTOS BY TIM DIPERI AND AMA NEWS**

US National Championships 2015



The US helicopter national championships took place just prior to the massive annual

IRCHA event in 2015. In fact, the 'Nats' actually begins IRCHA week and, well, what a week it was! The small mid-west town on Muncie Indiana (about an hour from home of the Indianapolis speedway) gets just a bit larger and louder and becomes home to hundreds and hundreds of model helicopter enthusiasts from all over the world.

FAMILY EVENT

I competed in my very first American National Championships in 1985. At that time, the Nats was an event that was held in different parts of the United States. As much as I enjoyed visiting other parts of the country, I have become very much appreciative of the 2,000 acre nationals (AMA) flying site we are fortunate to use.

Contest directors (Craig Bradley - AMA and F3C and Darrell Sprayberry - all scale events helicopter related) do a great job and have done so for many, many years. I know both of these gentlemen for a long time and they are the best of the best as far as going out of their way for others to enjoy this sport. On a side note, both of them can mix one heck of a drink!

For Craig, the Nats has been a family event. Years ago, when his two boys were young, he had them help out with the event and today his wife joins him to help. Without the Bradley family, we would not have an American championships.

ARRIVAL TIME

I arrived on Saturday evening before the pilots meeting (on Sunday). I had been travelling a bit for my business and wanted to get some practice time in before the event. I arrived at the flying site as the AMA (Nationals) sailplane event was coming to a conclusion. I was surprised and shocked to meet up



Craig Bradley, far left and Darrell Sprayberry on right

with an old friend (sail plane pilot) that I had not been face-to-face with for over 25 years! It was great to see him and his sister and we had some fond memories to go over. It's just something that model aviation has been for me.

As we chatted, Craig Bradley (CD) was finely manicuring the flying field for helicopter competition. The evening was perfect so I flew till it was dark and,

my good friend, Dwight Shilling arrived and invited me to dinner.

Although several of the F3C team pilots could not compete this year (Daniel Hiatt was tied up with work and Nick Maxell was just wanting to come as a spectator this year since he was working hard as a new Futaba employee), we had great success at the AMA classes as well as the entire scale competition.

**Team
Futaba
makes
a clean
sweep**



COMPETITION CLASSES

AMA (Academy of Model Aeronautics) is the responsible administration for all model aviation in the country. IRCHA (the special interest group for model helicopters) provide all of the financial support required to actually run the contest. We typically offer four precision flying classes (including F3C) and three scale class offerings.

The introductory class (Sportsman) broke records for the number of participants and looks like these pilots are wanting more! It's good to see a strong resurrection of precision competition for model helicopters in America. About half of this group was brand new and most of the other half only began their competition journey at the previous year's Nationals.

In spite of not having any entries in the Advanced (class II), several of the Sportsman class competitors have committed to move up next season. Our (AMA) class progressions allow a new pilot to begin at the sportsman level and transition to F3C if they choose (once reaching Expert class, competitors are not required to move to F3C).

THE REAL DOGFIGHT

The competition both in F3C and Scale went very well. Both contest directors, Craig Bradley and Darrell Sprayberry, along with the quality judges as well as everyone that helped them did a great job. In three days we accomplished seven rounds of (AMA/F3C) competition in three separate competition classes. Likewise, there were three different (scale) classes fully flown. We did a great deal of flying in a three day period for the 2015 US National championships.

In F3C, just back from competing at the 2015 worlds championships, Dwight Shilling participated and won the US Nationals (F3C). Dwight, Nob Muraki and me all flew F3C (we gave Dwight a run for his money) and swapped to call for one another.

The real dogfight was in the Sportsman class with seven pilots. I got to know Robert Montee pretty well at the 2014 Nats. He and I hit it off well and he learned so much a short time. Most pilots trying out the Nat's find that their quality 3D performance means nothing when they try out any of the precision classes offered.

The one pilot that continued to keep Robert on his toes, Devin Hammond, a young man from Huntsville Alabama, is a poster child of someone that aspires to make a world team one day. I first judged Devin (his first contest) in 2014. Now, at the 2015 Nats, he was only one step from National champion for Sportsman!



Dwight Shilling (right) calls for Tim DiPeri



Food challenge perpetual trophy



Gordie Meade doing an impromptu training for pilots



Lots of SAB Urukay models



Many SAB Urukays at the event



Nick Maxwell caught a ride



Nick Maxwell



Nob Muraki, the enforcer



Peter Bisbal on left



Rotorworld transport all over



Tim DiPeri after flight



Your author third place F3C

All of the pilots flew quite well and hope they will continue to learn and be a part of the precision competition flying we all love. The final results are as follows.

US Nationals 2015 Results...

Class I - Sportsman

1st	Robert Montee
2nd	Devin Hammond
3rd	Bernard Shaw
4th	Justin Hartsock
5th	Peter Bisbal
6th	Mike Unger
7th	Michael Robinson

Class III - Expert

1st	Dennis Puruski
2nd	Andy Panoncillo

FAI

1st	Dwight Shilling
2nd	Nob Muraki
3rd	Tim Dperi

518 Scale

1st	Emile Sheriff
2nd	Don Irvine
3rd	Eric Babineaux
4th	Bob Burgo
5th	Bernard Shaw

Sport Scale

1st	Don Irvine
2nd	Emile Sheriff
3rd	Bernard Shaw

Team Scale

1st	Tommy Whitaker
-----	----------------

DWIGHT'S FOOD CHALLENGE

In addition to learning lots of RC helicopters and meeting lots of great people I was privileged to see history made. Dwight Shilling is world renowned (no joke here last time this happened was in Austria this year) to eat anything. So for eight years running at the end of each F3C contest fellow pilots try to find something that he will not eat. Rules are simple, it must be a food product suitable for human consumption and have a UPC code.

The most recent story was from Austria where he was challenged to eat some kind of canned and fermented fish that by recipe is right on the edge of rotting. Apparently he ate that no problem. Well for the Nats this year he met his match and was given something he would not eat. Peter Bisbal entered Carolina Reaper hot peppers advertised to measure 1,500,000 on the Scoville Heat scale. He would not eat it. He cited safety reasons right after he just touched the pepper on his tongue. My personal opinion is we will need to submit this for official judges review. I am not sure safety reasons is an acceptable reason to bow out. After all the salt and vinegar crickets he actually liked.

The undisputed champion in the Shilling food challenge



It's not all about full bodied machines



F3N IN 2016

Well, that's all for the US Nationals. During The final hours of the event I held a meeting with some of the best and well known names in the 3D flying community. I am happy to 'informally' announce that F3N

competition will be offered at the 2016 Nationals. This will be the first time for the United States to have an F3N world team. 🇺🇸

Tim Dperi



Great looking and a big crowd pleasing Airwolf scale heli



Nice large scale turbine scale helicopter being prepared for flight



In flight it's hard to tell if this is a model or the real thing, it's sounds great too!



Another great scale effort seen at the US Nats



This nice scale police heli was patrolling the skies at the Nats



Adding a multi-rotor head can really transform a scale helicopter



The real business of the US Nats is F3C competition but there is still a variety of models used



The latest SAB Goblin Urukay model in flight



Dwight Shilling takes up his annual eating challenge



Action from the US Nats competition



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JANUARY

- 1 Gloucester MFC Indoor Flying**
Bentham Country Club, Bentham, nr. Gloucester GL3 4UD. Every Saturday from Oct 17th 2015 to Mar 26th 2016. Slots for F/W, Mini F/W, Helis/Quads and Mini Helis/Quads. All welcome. BMFA membership required. 40 metre venue, bar and refreshments. Disciplines: Electric, indoor, RC fixed wing, RC helicopters. Website: www.glos-mfc.co.uk
- 4 Westland & Yeovil District Aeromodeler Indoor Flying**
Crewkerne Sports Hall, Crewkerne Sport Centre TA18 7NT. Indoor flying in a large (4 court) sports hall, maximum cost £5 per hour per adult. Juniors half price (but you MUST bring a responsible adult). Regular event twice a month, all year round (already booked until February 2016). Disciplines: Electric, Free Flight, Indoor, RC Fixed Wing, RC Helicopters. Website: www.home9999.plus.com/WHLMAC/news.htm
- 9 North London Model Flying Club Indoor Radio Control Meetings**
Furze Field Sports Centre, Potters Bar, Hertfordshire, EN6 3BW (Junction 24 / M25). All up weight limit for fixed wing 225g (max span 36 inch); helicopter 400g. BMFA insurance required. Admission, flyers £9 and spectators £2.50. Contact Peter Elliott on 01707 336982.
- 9 Gloucester MFC Indoor Flying**
Bentham Country Club, Bentham, nr. Gloucester GL3 4UD. Every Saturday from Oct 17th 2015 to Mar 26th 2016. Slots for F/W, Mini F/W, Helis/Quads and Mini Helis/Quads. All welcome. BMFA membership required. 40 metre venue, bar and refreshments. Disciplines: Electric, indoor, RC fixed wing, RC helicopters. Website: www.glos-mfc.co.uk
- 10 MMFC Indoor Flying**
Medway Park Leisure Centre (formerly Black Lion), Mill Road, Gillingham, ME7 1HF. Aircraft size: FW at safety officers discretion. Helicopters: 250 size max. Quads 24" (measured diagonally). Café on site. See website for details at www.medwaymfc.org.uk
- 16 Gloucester MFC Indoor Flying**
Bentham Country Club, Bentham, nr.

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- 17 Evesham Indoor Flying**
Evesham Leisure Centre, Abbey Road, Evesham WR11 4SU. Proof of BMFA Membership required. £6 per session. Electric, free flight, indoor, RC fixed wing and RC helicopters. Contact Mark Ashworth on 07710 005705 or email markashworth@ee.org
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Evesham Leisure Centre, Abbey Road, Evesham WR11 4SU. Proof of BMFA

FEBRUARY

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- 28 Beverley and District Model Aircraft Club Spring Swapmeet**
9.00am till 12 noon at Tickton Village Hall, near Beverley, HU17 9RZ. Entry £1.00, Tables £5. Contact Brian Jenkins 2bee.jays@live.com 07970 959875 or www.badmac.btck.co.uk

next month Issue 119 (March 2016) is out on 4th February 2016

Going Logo



We get the chance to fully test the latest Mikado Logo 800 Xtreme

WIN
in our latest
competition

Plus...

- **Zero to Hero**
Aaron Cole continues to help you prepare for 3D flying competition
 - **The Big One**
Full report from the 2015 IRCHA Jamboree
 - **Modern Classic pt3**
Shaun Garrity concludes the review of his Hobby King gyrocopter
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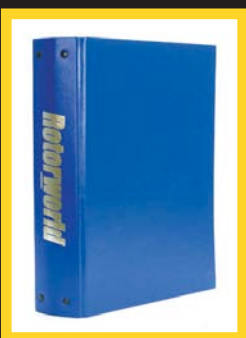
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